Town of Moultonborough, New Hampshire
Hazard Mitigation Plan Update, 2013

Prepared by the:

Moultonborough Hazard Mitigation Update Committee

Bentley Road Fire, 2007

2007
Updated: [month of final FEMA approval] 2013

DRAFT for Public Review

Town of Moultonborough, New Hampshire
Hazard Mitigation Plan Update

2007
Revised: 2013

With Assistance from:
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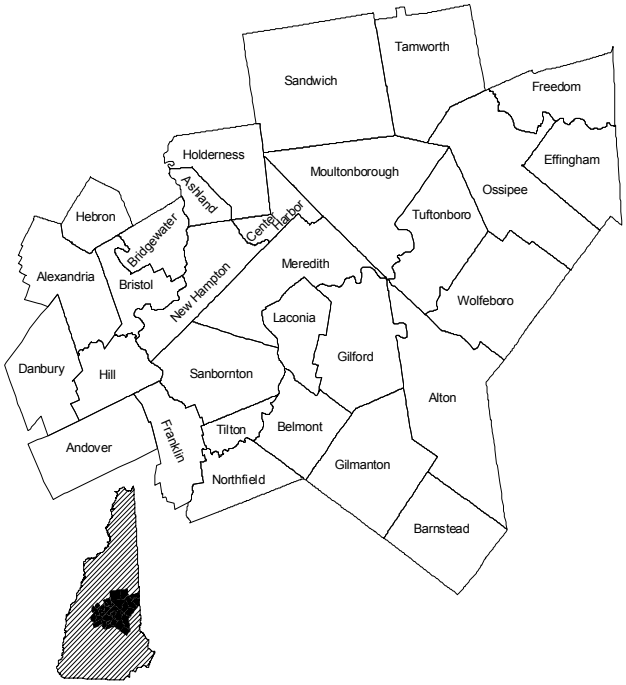
[Month of Final FEMA approval] 2013

Funding for this plan was provided by the NH Department of Safety, Homeland Security and Emergency Management, and with matching funds provided by the Lakes Region Planning Commission

THE LAKES REGION PLANNING COMMISSION



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EXECUTIVE SUMMARY

The *Moultonborough Hazard Mitigation Plan Update* (the Plan) serves as a means to reduce future losses from natural or man-made hazard events before they occur. The Plan was developed by the Moultonborough Hazard Mitigation Planning Update Committee (the Committee) with assistance from the Lakes Region Planning Commission, and contains statements of policy adopted by the Board of Selectmen in Chapter VI.

The Committee agreed that the hazards identified in the 2007 Plan continue today; three additional hazards were added to the list. The Committee determined high and moderate natural and human-related risks, based on a ranking system detailed in Chapter III, and shown below:

High Risk	Moderate Risk
High Wind (Thunderstorm, Tornado, Downburst, Hurricane)	Flood
Lightning	Motor Vehicle Incident with Hazardous Materials
Severe Winter Weather	Epidemic

Several Critical Facilities were added to the existing list. The Committee identified numerous existing programs related to hazard mitigation including the following:

Existing Plans, Regulations and Practices Supporting Hazard Mitigation	
Hazard Mitigation Plan 2007	Subdivision Regulations
Code Enforcement	Site Plan Review Regulations
Zoning Ordinance	Master Plan
Flood Plain Ordinance	School Emergency Operation Plan
Emergency Power Generation	Capital Improvement Planning
Mutual Aid Agreements	Emergency Response Training and Drills

Most of the Actions from the 2007 Plan have either been completed or are no longer pertinent. In its effort to further reduce the vulnerability of the town to future hazards, the committee developed a list of 22 general and hazard-specific mitigation actions. These actions were prioritized based on local criteria. Discussions were held regarding how implementation might occur over the next five years. The results of these discussions are summarized in Table 18: Implementation Schedule for Mitigation Actions.

CHAPTER I: PLANNING PROCESS

A. BACKGROUND

In order to to be eligible to receive disaster related Federal Emergency Management Agency (FEMA) grant funding to be used for hazard mitigation projects and actions that will ultimately reduce and mitigate future losses from natural or human hazard events, FEMA has required that all communities within the state of New Hampshire establish local hazard mitigation plans. In response to this requirement, the NH Department of Safety's Division of Homeland Security and Emergency Management (HSEM) and the nine regional planning commissions in the state entered into agreements to aid communities with plan development and update. The plan development process followed the steps outlined in Southwest Regional Planning Commission's *Guide to Hazard Mitigation Planning for New Hampshire Communities.*

B. AUTHORITY

The town of Moultonborough Hazard Mitigation Plan was prepared pursuant to Section 322, Mitigation Planning of the Robert T Stafford Disaster Relief and Emergency Assistance Act and Section 104 of the Disaster Mitigation Act (DMA) of 2000. Section 322 of DMA 2000 emphasizes the need for State, local and tribal entities to closely coordinate mitigation planning and implementation efforts.

C. FUNDING SOURCE

The New Hampshire Department of Safety's Homeland Security and Emergency Management (NH HSEM) funded the Plan with matching funds from the Lakes Region Planning Commission.

D. PURPOSE

The Moultonborough Hazard Mitigation Plan is a planning tool to be used by the town of Moultonborough, as well as other local, state, and federal government entities, in their efforts to reduce the negative effects from natural and human-related hazards. The Plan contains statements of policy as outlined in the Implementation Schedule for Mitigation Actions and in Chapter VI: Plan Adoption and Monitoring. All other sections of this plan are support and documentation for informational purposes only and are not included as a statement of policy.

E. SCOPE OF PLAN

The scope of this Plan includes the identification of natural hazards affecting the town of Moultonborough, as identified by the Committee. The hazards were reviewed under the following categories as outlined in New Hampshire's Natural Hazards Mitigation Plan:

I. **Flood, Wild Land Fire, Drought** (Flood, Dam Failure, Ice Jam, Wildfire, Drought)
II. **Geological Hazards** (Earthquake, Radon, Landslide)
III. **Severe Wind** (Tornado/Downburst, Hurricane, Thunderstorm/Lightning, Hail)
IV. **Winter Weather** (Blizzard/Snow Storm, Ice Storm, Nor'easter, Avalanche).
V. **Other Hazards** (Epidemic, Fire and Hazardous Materials, Terrorism)

F. METHODOLOGY

The Lakes Region Planning Commission (LRPC) corresponded with the Moultonborough Emergency Management Director (EMD) in early summer 2012 to initiate the hazard mitigation update process in the town of Moultonborough. The EMD established the Moultonborough Hazard Mitigation Planning Update Committee in July 2012 for the purpose of updating a long-range plan for hazard mitigation. The Committee consisted of representatives from the departments of Police, Fire, and Public Works, the Town Planner, Town Administrator, School Superintendent, and members of the Board of Selectmen. All meetings were open to the public.

Using the *Guide to Hazard Mitigation Planning for New Hampshire Communities*, the Committee developed the content of the Plan by following the process set forth in the handbook, and by referring to FEMA's *Local Multi-Hazard Mitigation Planning Guidance*.. The planner and the committee reviewed and referenced a variety of plans, studies, reports, and technical information during the development of this Plan Update; a list of these resources can be found in Appendix J. Some information on development trends was gathered at a meeting of the regional planner, the Town Planner, and the Code Enforcement Officer. Data on property valuation was gathered through correspondence with the Town Assessor.

The Committee held meetings from July through September, 2012 with an additional meeting in December 2012 in order to review and the draft plan. The following timeline shows the dates and corresponding Committee actions. The planning team reviewed each section of the plan and LRPC provided updated information on hazards in New Hampshire. Each section of the existing plan was revised and in some cases reformatted in order to develop a more comprehensive document. Meeting agendas and notes were posted at the town web page and are included in Appendix D.

Committee Meetings

July 25, 2012: *Introductory Committee Meeting:*
Ernest Davis Meeting Room at Moultonborough Town Hall
Step 1: Overview of update process and objectives
Step 2: Discussion of Development Trends since 2007
Step 3: Locate critical facilities and hazards on map
Step 4: Identify Hazard Events since 2007

August 1, 2012: *Committee meeting:*
Ernest Davis Meeting Room at Moultonborough Town Hall
Step 5: Probability of Hazard Occurrence
Step 6 Asset Assessment
Step 7 Review of Existing Plans and Policies
Step 8 Status of the 2007 Mitigation Actions

August 8, 2012: *Committee meeting:*
Ernest Davis Meeting Room at Moultonborough Town Hall
Review Asset Information
Review Status of 2007 Implementation Strategies

August 22, 2012: *Committee meeting:*
Ernest Davis Meeting Room at Moultonborough Town Hall

	Review Development Trends information
Step 9:	Discuss Problem Statements
Step 10:	Brainstorm hazard mitigation strategies
September 5, 2012:	*Committee meeting:*
	Ernest Davis Meeting Room at Moultonborough Town Hall
Step 11:	Discuss the Cost and Benefits of each Action to Prioritize the Strategies
September 12, 2012:	*Committee meeting:*
	Ernest Davis Meeting Room at Moultonborough Town Hall
	Complete the Prioritization Process
Step 12:	Discuss Implementation Strategy
December 12, 2012:	*Committee meeting:*
	Ernest Davis Meeting Room at Moultonborough Town Hall
	Review of Draft Plan by Committee

Public Involvement

The Moultonborough EMD invited a variety of Hazard Mitigation Planning stakeholders to join the Hazard Mitigation Planning Committee. The Committee was well represented by municipal officials, including members of the Board of Selectmen. Several local residents attended the meetings; one videotaped all of the meetings and posted these on a local blog. Specific opportunities for public input occurred at each meeting. Local businesses and members of the public were encouraged to attend all meetings through press releases and postings on the town and LRPC websites (Appendix C).

The Committee held a public comment period in order to obtain additional feedback on the draft document. The Plan (including comment instructions) was available for public review at Town Hall, the town library, and at the town website from December 20, 2012 - January 3, 2013. A press release and a public notice were distributed to regional media announcing the public comment period (Appendix C). The neighboring towns were also notified of the review period. This provided an opportunity for local and regional businesses, organizations, agencies, educational and health institutions in Moultonborough and surrounding towns to review and comment on the plan update.

G. ACKNOWLEDGMENTS

Special thanks to those that assisted in the development of this Plan:

Joel Mudgett	*Chair,* Moultonborough Board of Selectman
Jonathan Tolman	*Selectman*, Moultonborough Board of Selectman
Carter Terenzini	*Town Administrator,* Moultonborough
David Bengtson	*Chief*, Moultonborough Fire Department and *Emergency Management Director (EMD),* Moultonborough
Leonard Wetherbee	*Chief*, Moultonborough Police Department
Scott Kinmond	*Highway Agent* and *Public Works Director,* Moultonborough Department of Public Works, *Assistant EMD,* Moultonborough
Bruce Woodruff	*Town Planner,* Moultonborough
Susan Noyes	*Superintendent*, Moultonborough School District

Jodi Baker	*School Resource Officer,* Moultonborough Police Department
David Jeffers	*Regional Planner*, Lakes Region Planning Commission

Additional information was provided by:

Don Cahoon	*Code Enforcement and Health Officer*, Moultonborough
Gary Karp	*Town Assessor*, Moultonborough
Jennifer Gilbert	*Floodplain Management Coordinator*, NH Office of Energy and Planning
Nancy McGrath	*Programs Information Officer*, NH Dam Bureau, NH Department of Environmental Services

Meeting agendas and notes were sent to the following people; they were invited as part of the Committee but unable to attend the meetings:

Betsey Patten	*Selectman,* Moultonborough Board of Selectman, *Selectman's Alternate,* Moultonborough Planning Board
Ed Charest	*Selectman,* Moultonborough Board of Selectman
Russell Wakefield	*Selectman*, Moultonborough Board of Selectman, Planning Board
Don Cahoon	*Code Enforcement and Health Officer*, Moultonborough

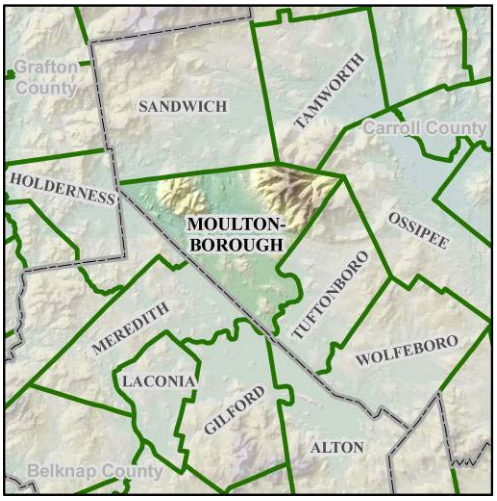
Special appreciation is extended to Moultonborough resident Hollis Austin who videotaped all committee meetings and posted them on the internet so that all could observe.

Heidi Lawton, the Carroll County Field Representative for NH Homeland Security and Emergency Management did receive agendas and meeting notes but was also unable to attend the meetings.

CHAPTER II: COMMUNITY PROFILE

A. GEOGRAPHY

The town of Moultonborough is located on the southwestern edge of Carroll County. It is bordered by Sandwich and Tamworth to the north, Holderness and Center Harbor to the east, Meredith, Gilford, and Alton to the south, and Tuftonboro and Ossipee to the east. The total area of Moultonborough is 75 square miles, 60 square miles of land and 15 square miles of water.[1]



Rugged, wooded slopes dominate the northern portion of Moultonborough – from Red Hill to the Ossipee Range. Nearly 24 percent, or 8,798 acres, of the town's land area is characterized by slopes of 15 percent or higher. The Ossipee Mountains in the east rise to an elevation of 2,975 feet, at 2,020 feet, Red Hill is another area with steep slopes in the northwest section of town.

The remainder of land in town is characterized by hilly to rolling terrain, divided by wetlands, ponds, and lakes. The numerous ponds and wetlands extend from Squam Lake in the northwest, through Wakondah Pond and Kanasatka Lake, Berry, Garland, and Lees Ponds in the north, to Lake Winnipesaukee in the central and southern parts of town. Moultonborough contains the most shoreline of any town in New Hampshire at 89 linear miles. Aquifers are found in the central section of town beneath Berry, Garland and Lees Ponds. Rivers running through Moultonborough include the Squam River, Shannon Brook, Weed Brook, Halfway Brook, and Red Hill River. The majority of town lies in the Winnipesaukee watershed.

B. WEATHER CONDITIONS

Moultonborough's temperatures and precipitation vary a great deal. January temperatures range from an average high of 30 degrees Fahrenheit to an average low of 8 degrees Fahrenheit. July temperatures range from an average high of 81 degrees Fahrenheit to an average low of 58 degrees Fahrenheit. Annual precipitation totals average between 42 and 48 inches, where the distribution is slightly lower in the winter months when compared to summer months. Moultonborough averages about 66 inches of snow per year.[2]

C. PUBLIC UTILITIES

A five-member Board of Selectmen governs the town of Moultonborough. The Fire Department has three full-time members and 41 call members and includes 22 Emergency Medical Technicians (EMT). The full-time Fire Chief also serves as the Emergency Management Director. The Police

[1] *New Hampshire Community Profiles*, NH Employment and Security Office, http://www.nhes.nh.gov/elmi/products/cp/profiles-htm/moultonborough.htm, accessed July 19, 2012.
[2] http://www.city-data.com/city/Moultonborough-New-Hampshire.html, accessed October 1, 2012.

Department consists of a full-time Police Chief, 11 full-time officers, two part-time officers, and five support staff providing 24/7 coverage. The Highway Agent/Public Works Director has fourteen full-time and four seasonal who maintain 52 miles of town roads, run the Transfer Station, and maintain the town's facilities. The Lakes Region General Hospital is located in Laconia, 12 miles southwest of Moultonborough, Speare Memorial Hospital is 18 miles to the northwest, and Huggins Hospital is 16 miles to the southeast. Additional hospitals are also located in Dover, Concord, and Lebanon.

NH Route 25 runs generally east-west and NH Route 109 runs generally north-south and they intersect in the Village area. NH Route 171 breaks off to the east from NH Route 109 and Moultonborough Neck Road is the sole access road to that portion of town. Most of the town's critical facilities are located along these roads.

Businesses and residences near the Center Harbor town line have access to the Bay Sewer District system. Approximately 750 residences are served by several community water systems; the rest of the town has individual wells. The town is served by NH Electric Cooperative. The Moultonborough Fire Department maintains 90 dry hydrants around town.

D. LAND USE AND DEVELOPMENT TRENDS

According to the US Census, Moultonborough was among the fastest growing communities in the Lakes Region from 1980 to 1990 (Table 1). This trend continued through the 1990s as the town had the highest rate of population growth in the region. The 2010 report showed a modest drop in the year-round population.

Table 1: Moultonborough, NH Year-Round Population, 1980-2010

Year	1980	1990	2000	2010
Population	2,206	2,956	4,484	4,044
% Changed	---	34%	52%	- 10%

The 2000 Census reported that 55.7% of Moultonborough's homes were seasonal; in 2010 that rate was up to 60.5%. Because of this very seasonal nature of housing in Moultonborough, it is important to acknowledge that the actual number of people residing in town can fluctuate quite a bit. To get a clearer picture of what this number might be the master plans of Moultonborough and several surrounding communities were reviewed. The Committee felt that a more accurate representation of the population that the town serves is determined by breaking down the type of housing, for while a year-round household might accommodate 2-4 persons, a second home may have 5 – 10 people staying there for a few weeks at a time. Using housing data from the Assessor, estimates used in neighboring communities, and the Committee's estimates regarding local population patterns the committee agreed upon the figures in Table 2.

Table 2: Moultonborough, NH Population

	Number of Units	Persons per Household	Persons
Year -round residential	1,800	2.4	4,320
Second homes residential	3,699	5.0	18,495
Seasonal (camps, campgrounds, motels)			2,000
TOTAL	**5,499**		**24,815**

While the number of building permits issued by the town from 2008 – 2010 (78) dropped to less than half what it had been in the previous three years (212), the Town Planner pointed out that most of these permits were for refurbishing or building an addition, only about ten percent of these (8) were for new construction. In 2012, there have been seventeen permits issued for new construction. Several members noted that newer seasonal homes and those that are being upgraded are better able to allow the inhabitants to shelter in place. With a strengthening economy, new commercial construction is beginning to occur near the Village area and along NH Route 25 near the Center Harbor town line. Some residential development might occur on the upland side of NH Routes 109 and 171. None of these are in particularly vulnerable locations.

While there is some variability, the Traffic Volume Reports from the NH Department of Transportation indicate no dramatic changes in traffic volumes since 2007 along Moultonborough's major roadways. NH Route 25 has a Average Annual Daily Traffic counts in the range of 10,000 – 13,000 vehicles per day; Moultonborough Neck Road carries about half this number and NH Route 109 (south of the village) carries about 4,400 vehicles per day. As this is a projected average over the entire year, there are certainly many summer days when the volume of traffic on any one of these roads far exceeds these figures. To help improve traffic patterns and reduce the likelihood of some transportation incidents along state routes, the town Planning Department is utilizing Access Management techniques.

In the past five years the town passed a Steep Slopes ordinance and the Floodplain ordinance has been updated. The new Digital Flood Insurance Rate Maps (DFIRM) for Carroll County will be presented to the Selectmen for authorization in February 2013.

CHAPTER III: RISK ASSESSMENT

A. IDENTIFYING HAZARDS

The town of Moultonborough is prone to a variety of natural and man-made hazards. The Committee reviewed all of the hazards identified in the 2007 Plan. This plan identified the following hazards events as the greatest threats to the town at that time (Table 3).

Table 3: Hazards identified in the 2007 Hazard Mitigation Plan

Hazard Event	Overall Risk
Thunderstorm & Lightning	High
Motor Vehicle Accident involving Hazardous Materials	High
Severe Wind Event (Tornado, Downburst)	Moderate
Winter Weather (Blizzard, Snow Storm, Ice Storm, Nor'easter)	Moderate
Flood	Moderate
Wild Land Fire	Moderate

The committee supplemented this by considering all of the hazards identified in the *2010 Multi-Hazard Mitigation Plan*, developed by the New Hampshire Department of Safety's Division of Homeland Security and Emergency Management, for additional hazards that might affect the town.[3] Table 4 provides a state-wide summary of the frequency and severity of these hazards.[4]

Table 4: New Hampshire Hazards Profile

Hazard	Frequency	Severity
Flooding	**High**	**High**
Coastal Flooding	Moderate	Moderate
Dam Failure	*Low*	Moderate
Drought	*Low*	Moderate
Wildfire	**High**	Moderate
Earthquake	*Low*	**High**
Landslide	*Low*	*Low*
Radon	Moderate	*Low*
Tornado/Downburst	Moderate	Moderate
Hurricane	Moderate	**High**
Lightning	Moderate	*Low*
Severe Winter Weather	**High**	**High**
Snow Avalanche	*Low*	*Low*
Epidemic	Moderate	**High**
Fire and Hazardous Materials	Moderate	Moderate
Terrorism	*Low*	Moderate

[3] http://www.nh.gov/safety/divisions/hsem/HazardMitigation/documents/hmp-chapter-4.pdf , visited April 27, 2011.
[4] http://www.nh.gov/safety/divisions/hsem/HazardMitigation/documents/hmp-chapter-3.pdf , visited April 27, 2011.

Due to geography, coastal flooding, landslide, and snow avalanche were not considered as locally pertinent. The committee discussed whether this plan was the most appropriate place for mentioning radon; in the end agreement was reached to keep it in this update (Appendix G). The Committee also reviewed historical information from internet sources about past hazard events in and near Moultonborough since 2007. Through this review of state-wide hazards, past regional and local events, and with discussion, the committee identified the hazards listed in Table 5 as the most important hazards to the town of Moultonborough. This list includes most of the elements from the 2007 HMP but with the addition of earthquake, dam failure, and epidemic (seasonally) as additions to the list.

Table 5: Hazards of Concern: Moultonborough, NH

Lightning	High Winds (Thunderstorm, Tornado/Downburst/Hurricane)	Snow & Ice Storms
Flooding	Hazardous Materials in Transport	Earthquake
Epidemic	Dam Failure	Wildfire

B. PROFILING HAZARD EVENTS

Each of the hazards that the Committee identified as likely affecting Moultonborough is profiled below. This section of the plan describes each of the hazards which the Committee felt might impact Moultonborough. It describes the likely location of each hazard, the extent of the hazard, and the probability of an occurrence in Moultonborough. The extent is a description of "how bad the hazard could get" and the probability of occurrence is based upon a review of occurrences since the 2007 Plan as well as earlier events. A list of events prior to 2007 is included in Appendix E. For more information on these hazards, please see Appendix G. The Committee defined Probability of Occurrence as High (occurs at least once every two years), Medium (occurs at least once every ten years), and Low (there is usually at least ten years between each occurrence).

FLOODING

Location: There are a few road segments and one segment of lakeshore that flood. Flood Insurance Rate Maps (FIRM) developed in 2000 for Moultonborough (and being updated with DigitalFIRMs in 2012) show the flood boundaries in the event of a 100 year flood, which is defined as a having a one percent chance of flooding each year. There is a large, mainly undeveloped area on Moultonborough Neck that does flood on occasion, limiting access to the ends of a couple of roads. There are also a couple of areas in the Balmoral subdivision that readily flood, cutting off a number of homes from emergency services (these are private roads and there is no other ready means of access).

Extent: Flooding is defined as a temporary overflow of water onto lands that are not normally covered by water. It results from the overflow of rivers and tributaries or inadequate drainage. Flooding is most commonly associated with structures and properties located within a floodplain.

In Moultonborough, despite the large areas of surface water and low slopes relative to the region, there are relatively few low lying areas susceptible to flooding. A few homes at the end of Kim's Lane experience minor flooding when the water level of Lake Winnipesaukee is high. Most of the concerns expressed by the town were associated either with flooding on low-lying roads which limits emergency

access (Sunrise Drive and Robin Lane) or road erosion associated with steep slopes (Ossipee Park Road, Bodge Hill Road).

History:

Hazard	Date	Location	Remarks/Description	Source
Flood	4/16/2007	Wolfeboro	FEMA funds were made available in Wolfeboro	Wolfeboro HMP Committee
Flood	3/9/2008	Conway		NOAA
Flood	4/29/2008	Conway		NOAA
Flood	8/28/2011	Ossipee, Moultonborough, Sandwich	Tropical Storm Irene $575K in damages to roads and bridge	NOAA

On August 4, 2008 rain events caused substantial flash flooding and washouts in Ashland, New Hampton, Center Harbor, Meredith. In addition to property damages, one young girl died in Ashland as a result of this storm.

Probability of Occurrence: High

HIGH WINDS (THUNDERSTORM/TORNADO/DOWNBURST/HURRICANE)

Location: On average, six tornadoes touch down somewhere in New England each year. There is no way of knowing where or when the next damaging tornado will strike as they are among the most unpredictable weather phenomena. Downbursts are 10 times more likely to occur than tornadoes All areas of town are susceptible to damage from high winds.

Extent: Tornadoes are violent rotating storms that extend to the ground with winds that can reach 300 miles per hour. They are produced from thunderstorms and can uproot trees and buildings. According to the National Oceanic and Atmospheric Administration (NOAA) a downburst is a strong downdraft, rotational in nature, which causes damaging winds on or near the ground. Winds can exceed 130 mph.[5] Downbursts fall into two categories based on their size:

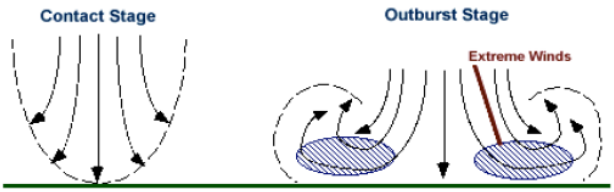


Image source: NH HSEM

- microbursts, which cover an area less than 2.5 miles in diam
- macrobursts, which cover an area at least 2.5 miles in diameter.

Downed limbs and trees can make roads impassable and bring down power and telephone wires. Paradise Drive is the sole access road to the Balmoral subdivision. This is a particular issue along many private roads, where cutting back of trees does not occur as frequently as along municipal roads.

In Moultonborough, the major damage from downbursts or tornados comes from falling trees, which may take down

[5] *Weather Glossary*. National Oceanic and Atmospheric Administration, http://www.weather.gov/glossary/index.php?letter=d, visited March 8, 2011.

power lines, block roads, or damage structures and vehicles. A wind event in Moultonborough on July 26, 1994 was classified as a macroburst. It affected an area one-half mile wide by 4-6 miles in length. This same storm produced wind damage typical of a micro/macroburst in nearby Meredith. On July 24, 2008 an F2 (Significant) tornado cut a 50-mile swath through central New Hampshire on the eastern side of Lake Winnipesaukee took down trees and electrical lines and did damage to buildings in parts of nearby Wolfeboro (See Appendix G for more details).

History:

Hazard	Date	Location	Remarks/Description	Source
High Winds	8/25/2007	Moultonborough	Winds > 50 knots	NOAA
High Winds	6/22/2008	Tamworth	Winds > 50 knots	NOAA
High Winds	7/9/2008	Wolfeboro	Winds > 50 knots	NOAA
Tornado	7/24/2008	Five counties, including Belknap and Carroll	F2 - 50-mile swath cut through south-central part of NH. Nineteen homes destroyed. One death. State and federal disaster declared in five counties.	NH HSEM
High Winds	7/19/2010	Tuftonboro	Winds > 50 knots	NOAA

Additionally, NOAA reported thirty-five thunderstorm/wind events impacting Carroll County between 2007 and 2012; no substantial damages were reported.

Probability of Occurrence: High

SEVERE WINTER WEATHER (SNOW STORMS, ICE STORMS)

Location: Severe winter weather occurs frequently in the northeast and the possibility exists for residents to have to withstand several days without power. It is felt that no one area of the region is at greater risk than another, but there are segments of the population that are more at risk. These include the elderly, people that are in need of regular medical care, and young children. These weather events can vary greatly based on slight differences in temperature, humidity, and elevation. Some events will produce a combination of winter weather types. Snow and Ice Storms can affect the entire town.

Extent:

A heavy snowstorm can be defined as one which deposits four or more inches of snow in a twelve hour period.[6] Heavy snows can cause damage to property, disrupt services, and make for unsafe travel, even for emergency responders. Due to poor road conditions, residents may be stranded for several days. Extra pressure is placed on road crews and emergency services under these conditions.

Snow load in severe winter storms is of concern as well. This is particularly true for flat roofed structures. Several small storms can produce the same snow load as a single larger storm and the combined weight of the snow load can damage rooftops. Ice adds additional weight as well. It is not uncommon in New Hampshire to experience mixes of winter precipitation as temperatures fluctuate above and below the freezing mark. While not widespread, instances of collapsed roofs are not uncommon.

[6] http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html, visited February, 8, 2011.

Snowstorms are a common occurrence throughout the Lakes Region. Blizzards, which may dump 12" – 36" or more of snow in a one- to three-day period are less frequent, but can have a serious impact on structures, utilities, and services. The region typically receives greater than 66" of snow annually.[7]

An ice storm coats trees, power lines, streets, vehicles, and roofs with a very slick and heavy coating of ice. The major threats to a community due to ice storms include structural damage due to heavy loads on roofs, interruptions of services such as electricity, fuel, water, and communications, as well as hazardous road conditions.

In the winter of 1998, a major ice storm crippled much of New Hampshire, coating everything with as much as three inches of ice. This storm was the most costly FEMA/Presidential Declared disaster in New Hampshire's history. The ice load bent trees and power lines and led to massive power outages throughout the state. The U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory estimates a 40 – 90 year return period for an event with a uniform ice thickness of between 0.75 and 1.25 inches. Ten years later, however, New Hampshire was struck again by another severe ice storm. The December 2008 ice storm caused more damage than any other storm in the state's history. The President declared this storm as a major disaster and the state received $15 million in federal aid for recovery.[8]

New Hampshire generally experiences at least one or two nor'easters each year with varying degrees of severity. A nor'easter is defined as a large anticyclone weather system that resides near the New England region. These storms have the potential to inflict more damage than many hurricanes because high winds can last from twelve hours to three days, while the duration of hurricanes ranges from six to twelve hours. A nor'easter also has the potential to sustain hurricane force winds, produce torrential rain, and create blizzard conditions in winter months. Infrastructure, including critical facilities, may be impacted by these events, and power outages, communications, and transportation disruptions (i.e., snow and/or debris-impacted roads, as well as hazards to navigation and aviation) are often associated with the event.

In the winter months, the state may experience the additional coincidence of blizzard conditions with many of these events. A blizzard is characterized by sustained winds or frequent gusts to 35 miles per hour or greater and considerable amounts of falling or blowing snow that last for a duration of three hours or longer. The combination of winds and snow reduce visibility to less than a quarter mile.[9] The added impact of the masses of snow and/or ice upon infrastructure often affects transportation and the delivery of goods and services for extended periods.

Downed limbs and wires and unplowed or untreated roads can severely limit emergency access to many residences. The potential for very cold temperatures and loss of power can quickly compound the issue. A severe ice storm struck central and southern New Hampshire and New England on December 11, 2008. Over 400,000 people were without power, some for over two weeks, and overall damages exceeded $15 million.

[7] *Northeast States Emergency Consortium,* http://www.nesec.org/, visited January 25, 2011.
[8] http://www.fema.gov/news/newsrelease.fema?id=48384, visited January 25, 2011
[9] "Winter storm terms," http://www.fema.gov/hazard/winter/wi_terms.shtm, visited February 8, 2011.

History:

Hazard	Date	Location	Remarks/Description	Source
Nor'easter	4/27/2007	Statewide	Nor'easter caused flooding, damage in excess of $25 million	FEMA
Ice Storm	12/11/2008	Statewide	State emergency declaration after major power and transportation disruption. Exceeding $15 million in damages. Over 400,000 without power, 2 fatalities due to carbon monoxide poisoning.	NH HSEM

A series of nor'easters struck the state between February 23 and March 3, 2010 that left 330,000 residents without power. This was declared a major disaster by the President and the state received $2 million in federal recovery aid.[10]

The 2007 Patriots' Day Nor'easter was one of the largest springtime storms to strike New England.[11] The storm brought heavy snowfall to the central and northern New Hampshire which flooded many rivers. The storm also packed hurricane force winds which caused structural damage and power outages from downed trees. FEMA and the U.S. Small Business Administration paid nearly $30 million in New Hampshire for disaster aid related to this nor'easter.

Additionally, NOAA reported thirty-eight snow and ice storm events impacting Carroll County between 2007 and 2012; no substantial damages were reported.

Probability of Occurrence: High

LIGHTNING

Location: Lightning can strike anywhere in town.

Extent: All thunderstorms contain lightning, which can cause death, injury, and property damage and have great potential to cause structure and wildfires. Although the numbers have trended downward in recent decades, during the last half of the twentieth century more people were killed in the United States each year by lightning than by any other weather event. It can also wreak havoc with electrical and communications systems.

History: In the spring of 2012 the Public Safety Building was hit by lightning, resulting in the need to replace numerous computer systems.

Probability of Occurrence: High. In the Lakes Region, however, fewer than two lightning strikes occur per square kilometer annually.[12] While this value is not particularly high compared with other parts of the country, the frequency of storms with lightning is a significant local concern. The Committee is concerned that lightning might ignite a fire or damage emergency communications systems.

[10] http://www.fema.gov/news/newsrelease.fema?id=51887 visited January 25, 2011
[11] http://www.fema.gov/about/regions/regioni/ora/externalaffairs/patriotsdaynoreaster.shtm, visited May 15, 2012.
[12] *Northeast States Emergency Consortium,* http://www.nesec.org/ visited January 25, 2011.

HAZARDOUS MATERIALS IN TRANSPORT

Location: Major roadways, especially in populated areas or at water crossings are areas of concern. The committee noted NH Route 25 in the Village Area and at Sheridan Road as areas of particular concern.

Extent: Oil spills along many of the routes in Moultonborough could result in the contamination of wells or waterbodies in the Lake Winnipesaukee watershed. In addition to distributing fuel to central locations in the region, tankers travel throughout the area daily to deliver home heating fuel. Many oil tankers have the capacity to carry 10,000 gallons of home heating oil.

History: In 2010 the driver of a tanker truck lost control in the Village Area. No one was injured and no substantial damages occurred in this case.

Probability of Occurrence: Moderate

EARTHQUAKE

Location: An earthquake would affect all areas of Moultonborough

Extent: An earthquake is a series of vibrations induced in the Earth's crust by the abrupt rupture and rebound of rocks in which elastic strain has been slowly accumulating. Earthquakes are commonly measured using *magnitude*, or the amount of seismic energy released at the epicenter of the earthquake. The Richter magnitude scale is a mathematical device used to compare the size of earthquakes, shown in Table 7.[13]

Table 7: Richter Magnitude Scale

Magnitude	Earthquake Effects
2.5 or less	Usually not felt, but can be recorded by seismograph.
2.5 to 5.4	Often felt, but only causes minor damage.
5.5 to 6.0	Slight damage to buildings and other structures.
6.1 to 6.9	May cause a lot of damage in very populated areas.
7.0 to 7.9	Major earthquake. Serious damage.
8.0 or greater	Great earthquake. Can totally destroy communities near the epicenter.

New Hampshire is considered to be in an area of moderate seismic activity with respect to other regions of the country. This means the state could experience large (6.5-7.0 magnitude) earthquakes, but they are not likely to occur as frequently as in a high hazard area like the Pacific coast.

There is the potential for nearby earthquakes to register 5.5 on the Richter Scale, causing slight damage to buildings and structures. Due to the unique geology of New Hampshire, earthquake propagation waves travel up to 40 times further than they do in the western United States, possibly enlarging the area of damage.[14] The strongest earthquakes to strike New Hampshire occurred December 20 and 24, 1940 in the town of Ossipee. Both earthquakes had a magnitude of 5.5 and were felt over an area of 400,000 square miles.

[13] http://pubs.usgs.gov/gip/earthq4/severitygip.html, visited February 8, 2011.
[14] http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html visited February 8, 2011.

History: On average, every other year the Lakes Region experiences an earthquake, though these earthquakes are mild and go mostly undetected by people. Tamworth is identified as a major epicenter in the region.[15] A search of the USGS National Earthquake Information Center database shows that since 1993 there have been 20 earthquakes (magnitude > 2.5) within a 50 km (31 mi.) radius of Moultonborough; the largest was magnitude 3.9. None had occurred since 2004[16] until a 4.0 quake centered in southern Maine (50km away) shook the region on October 16, 2012.

Probability of Occurrence: Moderate

EPIDEMIC/PANDEMIC

Location: An epidemic is an outbreak of a disease, generally isolated to one area. A pandemic is a widespread disease outbreak. The disease spreads easily person-to-person, can cause serious illness, and can sweep across the country and around the world in very short time.[17] An outbreak could impact anyone in town. Transmission of germs and diseases between people is accelerated in a close living and socializing environment. Schools, and congregate care centers for the elderly are good places for transmission to occur.

Extent: The New Hampshire Health and Human Services developed an epidemic and pandemic response plan in February 2007, so that communities can be prepared and respond to outbreaks.[18]

Over the past ten years, two strains of influenza viruses have become concerns across the country. The Lakes Region of New Hampshire has a large influx of seasonal visitors, which could make viral containment very difficult. Between 2005 and 2006, the Avian Influenza H5N1 virus infected 81 people and killed 52 in 10 countries in Asia and Africa**.** Most of the H5N1 cases were a result of human contact with infected poultry and the spread of the virus has not continued beyond that person. Although no human-to-human cases have been reported, viruses have the ability to mutate. The significance of the H5N1 pandemic is that it brought local, state, and federal attention to the need for pandemic emergency preparedness plans.

In 2009, the WHO declared a global H1N1 pandemic.[19] H1N1 is an influenza virus that can spread "human to human" through respiratory droplets from coughs or sneezes.[20] Many of the planning systems developed out of the H5N1 pandemic were useful during this pandemic.[21]

History: While there certainly have been minor outbreaks of flu in town, no major outbreaks of this or any other infectious disease was identified during this process.

Probability of Occurrence: Moderate. Epidemics do occur in Moultonborough and other Lakes Region communities from time to time. The Committee noted that preparedness efforts have improved in the last five years.

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[15] http://des.nh.gov/organization/commissioner/pip/factsheets/geo/documents/geo-3.pdf , pg. 3, visited January 25, 2011.
[16] USGS. http://earthquake.usgs.gov/earthquakes/eqarchives/epic/, Accessed August 2, 2012
[17] http://www.pandemicflu.gov/, visited February 8, 2011.
[18] http://www.dhhs.nh.gov/dphs/cdcs/avian/documents/pandemic-plan.pdf, visited February 8, 2011.
[19] http://c3ph.org/Files/vaccine_fact.pdf, visited February 15, 2011.
[20] http://c3ph.org/Files/H1N1FAQ.pdf, visited February 15, 2011.
[21] http://www.cdc.gov/h1n1flu/cdcresponse.htm, visited February 8, 2011.

TRANSPORTATION INCIDENT

Location: Localized – Ossipee Mountain Road and NH Route 171 and specific areas along NH Route 25 identified in the NH Route 25 Safety Study.

Extent: While trucks are not transporting hazardous materials along Ossipee Park Road (CG Roxanne Bottling Company), they are coming down the hill fully loaded (approximately 18 tons). At the base of the hill is a state route. In a collision, the degree of damage would depend on what is in the vehicle crossing the intersection at the time. Vehicular accidents do occur along NH Route 25, usually involving one or two vehicles; poor driving conditions may lead to the involvement of additional vehicles. Occasionally fatalities do result from these incidents.

History: August 9, 2012 a fully loaded tractor-trailer lost its brakes on Ossipee Park Road through the intersection with NH Route 171 and 200 feet into the woods with only minor injury to the driver. Neighbors reported three similar incidents during the prior year.[22] May 14, 2012 a fully loaded truck lost its brakes and rolled over after crossing NH Route 171; the driver sustained a leg injury.[23] A fatal accident in April 2012 on NH Route 25 involving a pickup truck and logging truck tied up traffic for four hours.[24]

Probability of Occurrence: High

WILDLAND FIRE

Location: Moultonborough is heavily wooded; a fire could occur anywhere; however the remote Red Hill and fairly densely developed Long Island are target hazard areas.

Extent: A wildfire is defined as a fire in wooded, potentially remote areas that may endanger lives. New Hampshire has about 500 wild land fires each year; most of these burn less than half an acre. Much of the Lakes Region is forested and susceptible to fire. There have been fires on Red Hill but due to a low fuel load and limited development in this area, it was not viewed as a major concern. However, Long Island is an area of concern due to a high fuel load, steep slopes, prevailing wind, a relatively dense population, and limited access.

History: No local occurrences have been reported since 2007. Through the first nine months of 2012 there have been 295 fires reported throughout the state, burning slightly less than 200 acres of land; this includes an 86 acre fire in the town of Hill. In Carroll County both the number of fires and the acres burned have been dropping nearly every year since 2007, with less than ten acres burning each year.[25]

Probability of Occurrence: Low

[22] WMUR NH's News 9, August 10, 2012. http://www.wmur.com/news/nh-news/Bottled-water-truck-crashes-in-Moultonborough/-/9857858/16047514/-/eqoy1d/-/index.html
[23] WMWV http://www.wmwv.com/water-truck-driver-injured-after-crash-in-moultonborough/
[24] WMUR http://www.wmur.com/Fatal-Crash-Shuts-Down-Route-25-In-Meredith/-/9858568/13424472/-/rrfg0p/-/index.html
[25] NH Division of Forests and Lands http://www.nhdfl.org/fire-control-and-law-enforcement/fire-statistics.aspx, June 2, 2012.

DAM FAILURE

Location: Lake Kanasatka dam near NH Route 25 is the only Significant Hazard dam in Moultonborough.

Extent: Dams in New Hampshire are classified by the New Hampshire Department of Environmental Services Dams Bureau. The four dam hazard classifications (High, Significant, Low, and Non-Menace) are based on the potential losses associated with a dam failure (See Appendix G for detailed descriptions). High (H) and Significant (S) Hazard dams have the highest potential for damage; this could include damage to state or municipal roadways. There are ten active dams in Moultonborough (Table 8); one Significant Hazard, two Low (L) Hazard, and seven Non-Menace (NM) Hazard dams; the Lake Kanasatka dam is a Significant Hazard dam. The Lamprey Sewage Lagoon had been listed as a Significant Hazard dam; the dam was removed in 2010.

Table 8: Active dams in Moultonborough

Hazard Class	NAME	RIVER	IMPOUND (Acre-Ft)	HEIGHT (Feet)	DRAIN AREA (Sq. Mi.)
S	LAKE KANASATKA DAM	TR LAKE WINNIPESAUKEE	392.00	17.00	7.30
L	CASTLE IN THE CLOUDS DAM	SHANNON BROOK	4.00	20.00	1.92
L	CAMP WINAUKEE SEWAGE LAGOON	N/A - NO OUTLET	0.00	0.00	0.00
NM	WEED BROOK HYDRO	WEED BROOK	0.25	2.67	1.25
NM	HALFWAY BROOK HYDRO	HALFWAY BROOK	0.50	5.00	1.00
NM	FARM POND DAM	HALFWAY BROOK	0.15	7.00	0.01
NM	EMERSON DAM	UNNAMED STREAM	3.00	5.00	0.00
NM	LEES MILL DAM	LEE MILL POND	0.52	16.00	27.41
NM	FARM POND DAM	NATURAL SWALE	0.75	6.50	0.01
NM	ASHJIAN DAM	UNNAMED STREA	0.23	15.00	0.00

History: There have been no known dam failures in Moultonborough.

Probability of Occurrence: Low

Summary

It is cost prohibitive to make the built environment resistant to the most devastating natural hazards that could occur, though reasonable measures can be taken to minimize loss of life and property damage. Moultonborough may be affected by an unavoidable extraordinary circumstance such as a violent earthquake, but historically, events of this magnitude have been infrequent. Those natural events that are common to the northeast also have common elements of concern for public safety. These include the potential for long-term power outages, the potential need for short-term sheltering facilities, and the availability of equipment and trained personnel. Key to loss prevention in these relatively common event scenarios is pre-event planning that critically assesses communications within the community, mutual aid resources regionally, public awareness and education, and emergency response training.

CHAPTER IV: VULNERABILITY ASSESSMENT

A. INVENTORY ASSETS

The list of critical infrastructure for the town of Moultonborough was updated by the Committee and the values updated by the Town Assessor (Table 9). The critical infrastructure list is divided into four categories, 1) Essential Services; 2) Emergency Shelters; 3) Structures and Services; 4) Populations to Protect; and 5) Other. The first category contains facilities essential in a hazard event, including the Emergency Operation Centers. The second contains the emergency shelters within the town. The third category is a list of facilities that have been identified by the Committee as facilities to protect in order to minimize additional risk to hazards. The fourth category contains special populations that may require additional attention in the event of a disaster. In Moultonborough the fifth category includes the historic village area.

Table 9: Critical Facilities

CLASSIFICATION	TYPE	NAME	2011 Value
EOC & Essential Services	Fire/Police Department	Moultonborough Safety Building	Part of Town Hall Complex
Emergency Shelter / Populations to Protect	Educational	Moultonborough Academy	$7,598,000
Emergency Shelter / Populations to Protect	Educational	Moultonborough Central School	$6,645,100
Essential Services/ Back-up EOC	Administration	Town Hall Complex	$6,829,000
Essential Services	Electric Services	Power Substation	$132,200
Essential Services	Fire Department	Moultonborough Neck Station	$411,900
Essential Services	Public Works	Highway Garages	$537,900
Essential Services	Telephone	Fairpoint Communications^	$3,256,900
Populations to Protect	Day-Care	Imaginations…A Child's Place	$245,600
Populations to Protect	Elderly Housing	WestWynde Community	$761,700
Populations to Protect	Seasonal Summer Camp	Camp Quinebarge	$1,239,268
Populations to Protect	Seasonal Summer Camp	Camp Robindel	$6,555,100
Populations to Protect	Seasonal Summer Camp	Camp Tecumseh	$6,764,687
Populations to Protect	Seasonal Summer Camp	Camp Winnaukee	$6,878,886
Populations to Protect	Seasonal Summer Camp	Deer Hill Camp	$8,142,877
Populations to Protect	Seasonal Summer Camp	Geneva Point Center	$14,105,500
Structures & Services	Commercial	Commercial District	
Structures & Services	Landfill	Town Landfill	$592,900
Structures & Services	Marina	Trexler's Marina	$2,170,600
Structures & Services	Marina	Ambrose Cove Marina	$2,332,200
Structures & Services	Unique Feature	Castle in the Clouds*	$1,876,100
Historic Area	Historic Resources	Downtown Historic District	

	Added in 2013		
CLASSIFICATION	**TYPE**	**NAME**	**2011 Value**
Essential Services	Electric Services	NH Electric Coop substation on Moultonborough Neck Road	$6,560,100
Essential Services	Utility	Lakes Region Water	$927,089
Essential Services	Utility	Bay Sewage System	$561,000
Structure & Services	Community	Lions Club property	$508,500

^Note - Assessment now includes all poles and conduits in town.
* Note - Castle in the Clouds previously was owned by Lakes Region Conservation Trust and included all the land. It now is buildings only owned by Castle Preservation Society.

The *Potential Hazards and Critical Facilities Map* (Appendix F) identifies the location of the critical facilities in relation to mapped hazard areas.

B. IMPACT OF HAZARDS

The impact of a hazard is the potential degree of damage that could occur in Moultonborough. This incorporates the assessed value of each critical facility and the vulnerability of these facilities and various populations and places to protect. To rate the impact of a hazard, committee members considered the damages and consequences that might result from an event, as defined below:

- Low: limited structural damage, the town's ability to respond is not compromised, local residents can handle the hazard event without help from outside sources
- Moderate: some structural damage, the town's ability to respond is compromised, regional or county assistance is needed to survive and/or recover
- Severe: substantial structural damage, the town's ability to respond is greatly compromised, state or federal assistance is necessary to survive and/or recover

Flooding

The town of Moultonborough actively participates in the National Flood Insurance Program through the administration of its floodplain ordinance. By actively maintaining an up-to-date floodplain ordinance property owners are able to purchase flood insurance through the FEMA program.

As noted earlier, the Digital Flood Insurance Rate Maps (DFIRM) for Carroll County are in the final stages of review and are expected to be released in 2013. These maps represent an update to the current FIRM maps. The town's Floodplain Ordinance will be revised in coordination with NHOEP and presented to the town for adoption as soon as the maps are released. The Code Enforcement Officer is responsible for maintaining floodproofing and elevation certificates. The floodplains in Moultonborough are scattered around town. There are currently 46 buildings with flood insurance policies in force (insurance value $11,994,200). Since 1977 there have been three losses paid out for a total of $49,658. There have been no repetitive losses in Moultonborough.[26]

As noted in the Hazard Profile, because of the geography of Moultonborough, damage from flowing water is not a major concern; the concerns of the Committee instead focus on the fact that approximately 60 homes can end up with limited access to emergency services due to water coming over a couple of private roadways.

[26] NFIP State Coordinator, NH Office of Energy and Planning, September 2012.

Erosion along a short section of Ossipee Park Road could result in a delivery vehicle accident and interruption of business for the Castle in the Clouds/CG Roxane water bottling facility.

Potential impact to the town due to flooding/erosion/washout is low to moderate.

High Winds (Thunderstorm/Tornado, Downburst, Hurricane)
Tornados and downbursts could strike anywhere in town with little, if any warning. While individual events may be small and rare, their impacts could be devastating. All structures, especially older ones, which are not necessarily built to the current building code standards, could be at risk.

Damage can occur to most structures in town as a result of downed trees in any high wind event, including the commonly occurring thunderstorms. These winds can bring down limbs and trees, causing damage to structures as well as pulling down power and telephone lines and blocking roads. This is particularly the case along private roadways that may only get limited cutback of vegetation. The potential impact to the town due to high winds is high.


Tuftonboro - September, 2011

Winter Weather (Snow storms/Ice Storms)
Major roads, Populations to Protect, Emergency Response Facilities, Essential Services, and flat-roofed buildings are all susceptible to damage from one of these storms. While the town is accustomed to seasonal heavy snowfall, any particularly severe event with significant accumulations, especially combined with severe cold can be a burden. These events often lead to ice accumulation, and power loss, significantly increasing the vulnerability of populations and facilities.

The first priority of the Moultonborough DPW is to clear and treat all municipal roads. The town does also conduct winter maintenance on private roads. Some of their work is contracted out to local business. The precipitation from some storms can outpace the capacity of the equipment of these businesses. The potential for impact to the town is high.

Lightning
Power outages, whether associated with natural or man-made hazards have the potential to cause great disruption to residents and the functioning of the town. There is back-up power for most municipal facilities. The Town Hall (Secondary EOC) does not have facility-wide surge protection. The elderly and disabled who rely on powered medical devices are at risk. According to Fire Department records, more than 60% of homeowners who have registered with the Code Red notification program use cell phones as their primary method of contact. It was also noted that more and more of the communication, coordination, and security functions of the town's departments and facilities rely upon electronic systems. There is a high potential for lightning to have a direct impact on the town's critical facilities (Public Safety Complex, Town Hall, Moultonborough Neck Fire Station).

Hazardous Materials in Transport
The release of hazardous materials along one of the roadways in Moultonborough has the capacity to cause substantial damage in the town; there are many variables that could affect the degree of impact. Variables include the nature of the material, the location of the accident and its proximity to surface and groundwater, as well as structures. An oil spill along a remote section of NH Route 25 is quite different from a chemical spill along the same roadway in the center of town near the elementary school. Impact to the town would likely be moderate.

Earthquake
According to the US Geologic Survey, the overall earthquake risk to the state is high due to the built environment; which means that many structures in the state are old or not built to withstand an earthquake. Damage from the 1940 earthquakes in Ossipee included some damage to most of the chimneys in the epicenter region of Ossipee, ranging from cosmetic cracks to total collapse. Sections of several foundations collapsed and at least one house rotated on its foundation. In the town of Conway, 15 miles from the epicenter, one house was lost by fire when sparks in a cracked chimney started the blaze. Splits found in the rafters and trusses temporarily closed Ossipee High School. No damages were associated with the October 2012 earthquake but the potential does exist for some damages to occur.[27]

There are relatively few buildings taller than three stories high in Moultonborough. A large relatively large earthquake in all likelihood would impact the bridges, limiting the ability of emergency services to be rendered. The fire department would have some response problems if the bridges were impacted, although in most cases there are alternate options, requiring redeployment of apparatus and people. There is not an alternate over-land access route to Long Island. The likely impact of an earthquake on the town would be low to moderate.

Epidemic
The concerns associated with a epidemic include local capacity to respond to not only the residents of Moultonborough but also any visitors. The community does partner with Lakes Region Partnership for Public Health (http://www.lrpph.org/) for resources and training. While Moultonborough does have many visitors, it does not have a major health care facility and thus it is not anticipated that there would be many people from outside the community seeking direct medical assistance from the town. The impact of an epidemic on the town would be moderate.

Transportation Incident
While any vehicular accident has the potential for injury and even death, the impact of a vehicular accident on its own is relatively small. The impacts of such an event increase when multiple accidents occur, when they occur along evacuation routes, or they occur in conjunction with other hazards. A tractor-trailer incident on Ossipee Park Road or at its junction with NH Route 171 could impact several vehicles, temporarily limit access to the water bottling plant, or block travel along a portion of the state highway. A major transportation accident along NH Route 25 can tie up traffic and could result in delays in some emergency services. While a couple of the town's critical facilities, the Public Safety Complex and Moultonborough Central School are located along NH Route 25, damage to structures would likely be minimal and the impact on the town would be low.

[27] USGS http://earthquake.usgs.gov/earthquakes/eventpage/usb000d75b#pager, accessed October 17, 2012.

Wildfire
While there have been fires on Red Hill in the past, there are few structures at risk. Of far greater concern to the town are the approximately 76 homes along the northeast side of Long Island. A fire here would move quickly, have plenty of fuel, be difficult to fight, and there is only one access/egress road. The impact on the town by a wildfire event would be moderate.

Dam Failure
The major concern of the committee centered on whether the appropriate information would be accessible and up to date for Emergency Responders. The Lake Kanasatka dam could impact NH Route 25, a major evacuation route for the town. While the Low Hazard dam at Castle in the Clouds is 20 feet tall, the water would have to flow more than half a mile before encountering any roads and further still to impact buildings. The impact to the town from a dam failure would be moderate.

C. ESTIMATING POTENTIAL LOSSES

The 2011 assessed value of the critical facilities identified in Section A are listed in Appendix H, totaling $85,633,107. This does not; however, include the contents of the building and does not necessarily reflect the cost of full replacement. Also not reflected in this assessment is the value of built infrastructure such as streets, bridges, curbs, sidewalks, drainage, and utility transmission lines. These values can also be used to determine potential loss estimates in the event that a natural or manmade hazard damages a part of or an entire facility. Many of the facilities listed here are privately owned but represent service that the Committee considered to be essential in terms of mitigating vulnerability to hazards.

The value of all of the structures in Moultonborough is $1,071,432,000. The value of the 5,499 residential structures in town totals $986,251,600. The value of the 137 commercial structures in Moultonborough is $52,583,100 and the value of the 28 tax-exempt structures (including the structures such as the Public Safety Building and Town Hall) is $32,597,300. Using these figures and acknowledging that there is wide variation on the value of individual structures throughout town, the average value of residential structures in Moultonborough is $179,351, of commercial buildings is $383,818, and of exempt buildings is $1,164, 189.

In Chapter II Community Profile it was pointed out that while the year-round population of Moultonborough is somewhat over 4,000 residents, the true number of people in the town could range up to six times that figure.

Flood
Forty-six residential properties in Moultonborough are covered by flood insurance, 13 in the A-Zone (1% chance of an annual flood), the remaining properties are in the B, C, and X Zones (less than 1% chance of an annual flood). No commercial/industrial properties are covered. This is less than one percent of the properties in town with structures. The insured value of these properties is nearly $12 million. Between 110 and 230 people could be at risk due to flooding. If there is a 1% chance of each of these properties flooding each year, then each year there is the potential that flooding could result in $119,942 in damages and put 1-2 people at risk.

High Winds
All structures in Moultonborough are susceptible to damage by high wind events, whether through thunderstorms, downburst, tornado, or hurricane. Assuming 1% to 5% town-wide damage to buildings, high winds could result in $10,714,320 to $53,571,600 in damages.

Winter Weather
All structures in Moultonborough are susceptible to damage by winter weather events, whether through ice storms, blizzards, or the heavy, wet snow often associated with a nor'easter. Assuming 1% to 5% town-wide damage to buildings, winter weather could result in $10,714,320 to $53,571,600 in damages.

Lightning
All structures in Moultonborough are susceptible to damage by lightning and resulting fires. The town's computer and communication systems could also be impacted by lightning. Assuming 1% town-wide damage to buildings, lightning could result in $10,714,320 in damages.

Hazardous Materials in Transport
A hazardous materials accident would not likely impact structures; rather the impact would be environmental. The 2007 Moultonborough Master Plan notes that a reduction in water quality could lead to $25 million of lost income to the Lakes Region (30 communities).

Earthquake
All structures in Moultonborough are susceptible to damage by an earthquake Assuming 1% town-wide damage to buildings, an earthquake could result in $10,714,320 in damages.

Epidemic
An epidemic would not impact structures; rather the impact would be on people and the public safety system.

Transportation Incident
The primary impact of a transportation incident would be in terms of injury and loss of human life. A secondary impact would be the associated stoppage or detour of traffic. This is especially important if this occurs during another hazard event on an evacuation route or if there are no alternate routes. A transportation incident would not likely impact structures.

Wildland Fire
Due to the heavily wooded nature of the town, all properties in town have the potential to be impacted by a wildland fire. However, the Committee identified seventy-six properties on Long Island that are far more exposed to wildland fire conditions than any other area of town. Table 10 indicates that these properties represent 1.39% of the number of residential structures in Moultonborough or $13,755,757 in structural value. Between 182 and 380 residents in this area are at risk to wildland fire in this area.

Table 10: Potential Losses - Wildland Fire

Number of Structures			Value of Structures			Number of People - Year-Round			Number of People - Seasonal		
in town	in Hazard Area	% in Hazard Area	$ in town	$ in Hazard Area	% in Hazard Area	# in town	# in Hazard Area	% in Hazard Area	# in town	# in Hazard Area	% in Hazard Area
5,449	76	1.39%	$986,251,600	$13,755,757	1.39%	4,044	182	4.51%	18,495	380	2.05%

Dam Failure

The primary impact of a dam failure would be on NH Route 25 at the Lake Kanasatka dam; water would travel approximately 1,500' before entering Lake Winnipesaukee. There is one structure that might be impacted by a dam failure. The impact on structures from a dam failure is estimated at $179,351.

D. SUMMARY OF RISK

A matrix was created to determine an overall hazard risk assessment rating. Each criterion (probability of occurrence and impact) was given a rating to show which hazards are the greatest threat to the community, based on: historic events and local knowledge, danger/destruction, the town's ability to respond, and economic, and environmental issues. These ratings were transformed into numerical values 3, 2, and 1, with 3 as high and 1 as low.

The overall risk rating associated with each hazard was determined by multiplying the two factors. This resulted in risk ratings ranging from 1 to 9; 1-3 = low risk, 4-6 = moderate risk, 7-9 = high risk. This Plan will focus on those events that pose at least a moderate risk to the town of Moultonborough as determined by the Committee (Table 11).

Table 11: Risk Assessment

Hazard Type	Probability of Occurrence			Impact			
	High	Moderate	Low	High	Moderate	Low	**Risk Rating**
Flood, Drought, Extreme Heat & Wildfire							
Flood	3				2		**6**
Dam Failure			1		2		**2**
Drought			1			1	**1**
Wildfire			1		2		**2**
Geologic Hazards							
Earthquake		2			2	1	**3**
Landslide			1			1	**1**
Radon		2				1	**2**
Severe Wind & Related Hazards							
High Wind (Thunderstorm/Tornado/ Downburst/Hurricane)	3			3			**9**
Lightning	3			3			**9**
Winter Weather & Related Hazards							
Blizzard/Snow Storm/Ice Storm	3			3			**9**
Human-Related Events							
MV Accident involving Hazardous Materials		2			2		**4**
Epidemic		2			2		**4**
Transportation Incident	3					1	**3**

It should be noted that the ranking of individual hazards for the purposes of planning discussion should not in any way diminish the potential severity of the impacts of a given hazard event. Further, hazards ranked as low risk may have the impact of increasing the risk of other hazards when they occur. For example, in the event of a drought, the risk of woodland fire may be greater. In combination, hazard events may have the impact of overwhelming existing emergency response systems.

CHAPTER V: MITIGATION STRATEGIES

A. CURRENT PLANS, POLICIES, AND REGULATIONS

The planning decisions that affect community growth patterns have evolved over the years as the population and demographics in Moultonborough have grown and changed. Many local programs have the effect of mitigating disasters; some of these have been in effect for years, others have been implemented as a result of the 2007 Hazard Mitigation Plan. A review of existing mitigation strategies was conducted and included review of pertinent documents including the zoning ordinance, subdivision regulations, emergency management plan, site plan regulations, and discussion with Committee members. Input from the Town Planner was particularly useful. The following strategies detail existing plans and regulations related to hazard mitigation.

Table 12: Existing Protections and Policies

Existing Protection	Description	Area Covered	Responsible Party
Zoning Ordinance	Floodplain Development limitations	Town	Planning Board
	Participate in NFIP		
	FIRM maps are developed		
	Shoreland Protection through the state's SWQPA.		
	Require access for FD & emergency responders on all property		
	Telecom Towers – require access for public safety		
	Steep Slopes ordinance		
Subdivision Regulations	[6.2] Easements for Utility Access & Public Service	Town	Planning Board
	[6.3] Flood Hazard Areas		
	[6.5] Documentation of Impacts		
	[7.1 D] Lots - Suitability		
	[7.1 E.5] Lots – Adequacy - Fire		
	[7.3] Public thoroughfare protection from access points through access management		
	[7.4 A] Drainage & provisions of Public Service		
	Stormwater Management Plan is required		
Radio Communications	4 cell towers [Red Hill, Glidden Rd, Mlt. Neck Rd, NH Route 25]	Region – partial coverage due to mountains	Police Chief
	1 proposed for PD/FD frequency radio		
	Lakes Region Mutual Fire Aid for supplementary communications		
Sewer/Water Service	Bayside Water & Sewer	Village District	Selectmen
Septic Systems	Zoning: 1 acre minimum	Town	Health Officer
	Town allows alternative septic systems – per DES standards		
Fire Department	Participate in Lakes Region Mutual Aid.	Town/Region	Fire Chief
	The F.D. reviews site plans and performs final inspections for oil burners, wood stoves, and fireplaces.		
	There is a monthly officers meeting to discuss response, table top exercises, and to review their pre-determined response cards.		

Existing Protection	Description	Area Covered	Responsible Party
Fire Department	Moultonborough F.D. is a member of the Central NH Haz Mat Team.	Town/Region	Fire Chief
	88% of F.D. has operational certification for Haz Mat Responders [operations & decontamination]; goal is 100% certification.		
	Full-time FD Chief		
	3 full-time officers, 39 call firefighters		
	Inspection/Maintenance Plan for equipment		
	100% officers NIMS/ICS Certified		
	2 FD Boats with equipment		
	Trails mapped - LR Conservation Trust (http://www.lrct.org/), Moultonborough Snowmobile Club (http://moultonborosmc.org/)		
	Logging roads mapped		
	Capital Reserve Fund for FD [not adequate]		
	Explorer Program [14-20 yr old] – 4 active in 2007		
	Adequate radios for FD volunteers		
Dry Hydrants	Cisterns exist at major subdivisions greater than three units	Town	Fire Chief
	FD conducts inspection & upkeep		
Police Department	Full-time PD Chief	Town	Police Chief
	12 full-time officers, 2 part-time, 5 support staff		
	Choices program		
	Capital Reserve Fund for PD		
	P.D. participates in mutual aid.		
	50% of P.D. is NIMS/ICS certified.		
	20-30% operational certification for Haz Mat, goal is 100%.		
	The P.D. is staffed 24/7 with minimum flex (2 people on duty) 18-20 hours per week. Dispatch is staffed M-F 16 hours and Saturday 10 hours. The state police fill in during the dispatch down time.		
	The P.D. and F.D. have biochem suits and gas masks.		
	Replacement schedule for gear, weapons, equipment, radios		
	PD Explorer Program [14-20 yr old] – 8 active 2007		
Highway Department	Full-time Road Agent	Town	Road Agent
	6 full-time staff		
	C.I.P.		
	Town maintenance plan – annually cleans catch basins in ditch lines and spillways. Have identified problem areas – beaver, backup, drainage issues, etc		
	Have Debris Management Training		
	Goal is to have 100% certified in HazMat awareness, NIMS & ICS.		
Emergency Operations Plans	EOP – updated 2009 School Emergency Plan, 2012	Town/ Moultonborough Academy and Moultonborough Central School	Emergency Management Director/ School Superintendent

Existing Protection	Description	Area Covered	Responsible Party
Building Codes and Inspector	Inspects fire places, electrical systems	Town	Code Enforcement Officer
	Adopted state building codes (IBC)		
Back up power	Generators	Moultonborough. Academy	Emergency Management Director
		Safety Building	
		Moultonborough. Neck FD	
		Town Hall	
		Transfer Station	
		Hwy Dept.	
Transfer Station	5 staff	Town	Facilities Supervisor
	Open 5 days a week		
Shelters	Moultonborough Academy	Town	Emergency Management Director
	Large generator		
	Shelter Team		
	Have an agreement with Red Cross for shelter supplies		
Emergency Event	Safety committee trained	Region	District Safety Committee
	Traffic Safety committee		
	Each Dept. responds to type of emergency event.		
Radon	Information on radon is provided to people getting new building permits.	Town	Code Enforcement Officer
Communication	Code Red Communications System established	Town	EMD

Table 13: Changes since the last plan

Zoning	Steep Slopes ordinance
Zoning, Subdivision, Communications, Sewer/Water, Septics	Several items were clarified or removed - no longer valid or not considered pertinent
Communications	New tower along NH Route 25
Fire Department	Several items were clarified or removed - no longer valid or not considered pertinent
	Increased percentage of HazMat responders
	http://moultonborosmc.org/, http://www.lrct.org/
	Decreased number of full-time staff, increased number of call firefighters
Police Department	Decrease in part-time and support staff
	No boat/dive team
Public Works	Have Debris Management Training
Emergency Operations Plans	Town EOP updated in 2009. School EOP added and updated in 2012.
Back up Power	Town Hall and Transfer Station, not Recreation Department
Shelters	Have an agreement with Red Cross for shelter supplies
Radon	Information on radon is provided to people getting new building permits.
Communication	Code Red Communications System established

B. STATUS OF 2007 ACTIONS

The committee noted that most of the mitigation strategies from the 2007 Hazard Mitigation Plan have either been completed or are no longer applicable due to changes in local circumstances. The status of the mitigation actions recommended in the 2007 plan is indicated in Table 13 as either, Completed, Deleted, or Deferred. Some of the deleted Actions are now listed above as "Current Plans, Policies, and Regulations". Several Mitigation Actions from 2007 really have multiple parts; these were separated out where appropriate. Deferred Actions (or deferred portions of Actions) were carried forward to be considered as new Mitigation Actions (Table 14).

Table 14: Status of Mitigation Actions from the 2007 Hazard Mitigation Plan

	PROPOSED MITIGATION ACTION	Status	Comment
A	Attain mobile data terminal for 24/7 Police Department dispatch.	Completed	2008
B	Attain compliant traffic/PPE/ response equipment and trailer.	Completed	An additional unit to serve as a message board could be useful.
C	Upgrade generators that are over-capacity.	Completed	All town buildings except Library and Recreation Dept. have sufficient generation capacity.
D	Establish a backup EOC in case the Public Safety Building is incapacitated (Recreation Department) and purchase equipment; generator, communications.	Completed	Town Hall is Backup EOC. Should consider setting up some duplicate information at Town Hall.
E	Develop and implement an education/outreach program about the NFIP Program.	Completed	On town website. Associated with the new DFIRMs. Utilizing town newsletter.
F	Incorporate the 2007 Hazard Mitigation Plan in the Emergency Operations Plan	Completed	2009
G	Adopt a steep slopes overlay district in the Moultonborough zoning ordinance.	Completed	2010
H	Update vulnerable culverts and bridges, identified by the DPW, throughout town.	Completed	Drainage structures have been mapped by DPW.
I	Include in the plan submission sections of both site plan and subdivision regulations a reference to the Hazard Mitigation Plan, and require the applicant to articulate how the proposal complies with the standards of the plan and achieves a "no adverse impact" status as it relates to emergency situations.	Completed	All Site Plan and Subdivision applications are reviewed by a Technical Review Committee which includes the Fire, Police, and DPW
J	Continue multiple Mutual Aid agreements including Police and Fire, and join the Public Works Mutual Aid compact.	Completed/ Delete	**A.** Joined the Public Works Mutual Aid compact. **B.** This is an Existing Policy.
K	Increase the amount allocated to the Fire Department Capital Reserve Fund.	Delete	Improvements have been made. This is not a Mitigation Action but a funding/budgeting tool.

	PROPOSED MITIGATION ACTION	Status	Comment
L	Develop a septic system maintenance/inspection/education program and implement it throughout town.	Delete	Not a hazard mitigation issue. Code Enforcement has outreach materials. Can do education.
M	Initiate and complete departmental NIMS training lead by those who are certified.	Delete	This is an Existing Policy.
N	Fulfill FEMA SAFER Program requirements for Fire Department; 3 new full-time staff for Fire Department.	Delete	Not practicable, as the program requires doubling the town's three-person Fire Department staff.
O	Develop a private roads agreement and maintenance plan with private associations.	Delete	DPW has road association contacts and conduct outreach to associations regarding maintenance issues. There are substantial legal issues associated with formal agreements.
P	Work with the Department of Safety, 911 Mapping Bureau to fix known problems with GIS road data to limit confusion in emergency planning and emergency response.	Delete	This is an Existing Policy.
Q	Continue to provide emergency responders with additional hazardous materials training.	Delete	This is an Existing Policy.
R	Include a recommendation in the Master Plan to maintain the Hazard Mitigation Plan.	Delete	This should be recommended for the next update; the Master Plan is not scheduled for an update within the next five years.
S	Replace above ground electric and communication cables serving existing structures with underground cables for protection in the downtown area, commercial centers, and residential subdivisions throughout town.	Delete	This is not economically feasible.
T	Revise local ordinances to include installations of sprinkler systems and other life safety requirements.	Delete	The State Legislature specifically prohibits the requirement of sprinkler systems.
U	Ensure that development projects comply with the existing mitigation strategies of the subdivision regulations, site plan review, and building codes.	Delete	This is an Existing Policy through the Development Office and Planning Board.

	PROPOSED MITIGATION ACTION	Status	Comment
V	Attain shelter necessities; cots, blankets, towels, toiletries, etc.	Delete	Have 25 cots available, others can be obtained through agreement with the Red Cross. Most residents shelter in place.
W	Update FIRM maps with aerial overlays [digitized flood maps].	Completed/ Defer	**A.** Preliminary FIRMs with aerial coverage are available at Town Hall. **B.** Final FIRMs will be shown on the town GIS as a new layer when released in 2013.
X	Revise site plan regulations to require underground cables in all new subdivision developments.	Completed/ Defer	**A.** The Subdivision Regulations require that new major subdivisions provide conduits to accommodate utilities. **B.** Site Plan Regulations will be revised to require this for commercial development, where applicable.
Y	Create and implement dry hydrant maintenance plan.	Defer	Need agreements with private landowners.
Z	Purchase and install local radio communication improvements; repeater, radios, etc.	Defer	Have met federal 2013 Interoperability requirements. Gaps still exist.
AA	Revise subdivision regulations to include state driveway standards for steep slopes.	Defer	This was recently attempted but encountered too much resistance. A modified version should be developed in the near future.

C. MITIGATION GOALS AND TYPES OF ACTIONS

The State of New Hampshire Natural Hazard Mitigation Plan is prepared and maintained by the New Hampshire Homeland Security and Emergency Management (NH HSEM). The 2010 version of the plan sets forth the following overall hazard mitigation goals for the State of New Hampshire[28]:

I. To improve upon the protection of the general population, the citizens and guests of the State of New Hampshire, from all natural and human-caused hazards.

II. To reduce the potential impact of natural and human-caused disasters on the State's Critical Support Services, Critical Facilities, and Infrastructure.

[28] http://www.nh.gov/safety/divisions/hsem/HazardMitigation/documents/hmp-chapter-7.pdf, pages VII-1&2, accessed July 25, 2012.

III. To improve the State's Emergency Preparedness, Disaster Response, and Recovery Capability in all New Hampshire communities.

IV. To reduce the potential impact of natural and human-caused disasters on the State's economy, environment, historical & cultural treasures, and private property.

V. To identify, introduce and implement cost effective Hazard Mitigation measures in order to accomplish the State's Goals.

VI. To reduce the State's liability with respect to natural and human-caused hazards generally.

VII. To address the challenges posed by climate change as they pertain to increasing risks in the State's infrastructure and natural environment.

The overall goals of Moultonborough's Hazard Mitigation Plan Update have not changed substantially since the adoption of the 2007 Plan.

Goal I: Community and Resource Protection
Reduce the potential impact of natural and manmade disasters on the town's residents and visitors, as well as its critical facilities, property, economy, and natural resources, while improving the emergency communication, alert, and response systems.

Goal II: Outreach and Education
Improve public awareness of the impacts of potential hazards and hazard preparedness, while increasing the public's involvement in emergency response and recovery.

Goal III: Coordination and Communication
Ensure plans are in place to address various emergency situations and that regular communication occurs between various departments and with local, regional, and state officials; thereby ensuring that those involved are aware of their responsibilities.

Goal IV: Damage Prevention
Minimize the damage and public expense which might be caused to public and private buildings and infrastructure due to natural and manmade hazards.

There is a strong emphasis in the town on Outreach and Education in part because so many of the areas of concern are private property; there is a need for property owners and associations to work with the town to ensure that services can reach all who are in need.

By reviewing the various potential hazards and the potential impacts that these might have on the community, a number of specific Problem Statements were identified. These are the basis for several hazard-specific goals:

- Help homeowners maintain their infrastructure (roads) so that emergency access is possible.
- Help homeowners protect their property against flooding
- Protect and maintain the town's infrastructure and reduce the risk of damage from fire.
- Protect the health and safety of residents and help homeowners protect their property by reducing the risk of fire.
- Protect the residents, property, and the local environment from the release of hazardous materials.

There are a number of types of actions that communities may take to reduce the likelihood that a hazard might impact the community. These include:

1. **Actions that will keep things from getting worse - Prevention**
    a. Zoning – floodplain and steep slope overlays
    b. Open space preservation
    c. Subdivision and Site Plan Review
        i. Impervious surface limits
        ii. Stormwater management
    d. Capital Improvements Plan – limiting the extension of public infrastructure into hazard areas
    e. Building and Fire codes

2. **Actions that address individual buildings - Property Protection**
    a. Flood-proofing existing buildings
    b. Retrofitting existing buildings to reduce damage
    c. Relocating structures from hazard-prone areas
    d. Public procurement and management of land vulnerable to hazard damage

3. **Actions that will inform the public - Public education and awareness**
    a. Make hazard information and maps available to residents and visitors.
        i. Paper or electronic
        ii. Targeted at residents and businesses in hazard-prone areas
        iii. Set up displays in public areas, or homeowners associations.
        iv. Give educational programs in schools.
        v. Make information available through newspapers, radio, TV.
    b. Ask businesses to provide hazard information to employees.
    c. Adopt a real estate disclosure requirement so that potential owners are informed of risks prior to purchase.

4. **Actions that will protect natural resources**
    a. Erosion and sediment control programs
    b. Wetlands protection programs
    c. Expand public open space
    d. Environmental restoration programs

5. **Actions that will protect emergency services before, during, and immediately after an event (long-term continuity)**
    a. Protect warning system capability
    b. Protection or hardening of critical facilities such as fire stations or hospitals
    c. Protection of infrastructure, such as roads that are needed in emergency response

6. **Actions that will control the hazard – Structural projects**
    a. Diversion of stormwater away from developed areas
    b. Reservoirs to store drinking water

D. POTENTIAL ACTIONS

Through a review of the risk assessment and local vulnerabilities, a number of Problem Statements were identified and refined by the Committee. Multiple brainstorming sessions yielded an updated list of mitigation strategies to address these current problems. Table 15 lists the problems and actions sorted out by the hazard(s) that they address and notes whether the action addresses existing structures/infrastructure or future (new) structures/infrastructure as well as which overall goal(s) they address and the type of mitigation action each represents. The ID numbers were used simply for tracking purposes; they do not indicate any sort of prioritization.

Overall Goal Key: CRP – Community and Resources Protection; OE – Outreach & Education; C&C – Coordination & Communication; DP – Damage Prevention

Table 15: Mitigation Actions by Hazard Type – Structure, Goal, Type

ID	Hazard	Problem	Recommended Action	New/ Existing	Goal	Type
2	All hazards	No emergency information records are located at the Secondary EOC. In the rare case that the Primary EOC is compromised, limited information would be available.	Keep duplicate emergency information records at Town Hall.	E	C & C	Long-term Continuity
6	All hazards	There are some areas of town (Bean Road, Harvard Camp Road, Swamp Road to Sandwich T/L, and Moultonborough Neck Road near station) that do not have reliable radio communication. During any hazard event emergency personnel might need to communicate with others.	Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 1 - Conduct a propagation study (with soft estimate for implementation).	E	C & C	Long-term Continuity
6A	All hazards	There are some areas of town (Bean Road, Harvard Camp Road, Swamp Road to Sandwich T/L, and Moultonborough Neck Road near station) that do not have reliable radio communication. During any hazard event emergency personnel might need to communicate with others.	Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 2 - Work towards implementation of recommendations of the Step 1 Study (contingent upon funding).	E	C & C	Long-term Continuity

ID	Hazard	Problem	Recommended Action	New/ Existing	Goal	Type
1	All hazards	More than 20,000 people may be without electronic communications throughout town, especially during a wind or ice event.	Obtain access to additional traffic response equipment and trailer capability (up to four) to serve as message boards along main roads.	E	C & C	Public Education & Awareness
8	All hazards	If Lakes Region Water is compromised, approximately 750 residences will be without water. This could happen with any hazard event.	Develop an understanding and working relationship to partner with the private water utility to share information regarding contingency plans.	E	C & C	Public Education & Awareness
9	All hazards	If Bay District Sewer system is compromised, an unknown number of residences and businesses will be without sewage services. This could happen with any hazard event.	Develop an understanding and working relationship to partner with the sewer utility to share information regarding contingency plans.	E	C & C	Public Education & Awareness
4	All hazards	Ice and heavy winds can bring down power lines. There is a high probability that these hazard events will occur throughout town.	Staff will bring regulations to the Planning Board for consideration requiring underground cables for new development.	N	DP	Prevention
5	Fire	The town has 90 dry hydrants throughout town that require maintenance; many are on private property.	Create and implement dry hydrant maintenance plan.	E	CRP	Long-term Continuity
10	Fire	Approximately 175 residences on the NW side of Long Island are vulnerable to wildfire due to geography, fuel supply, and limited access.	Reach out to the homeowners associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.	E	O & E, DP	Property Protection
14	Flood	Properties at the end of Kim's Alley along the lake flood when lake levels rise. Other properties in low-lying areas can experience damage during a heavy rain.	Provide education and outreach to homeowners regarding flood proofing their property.	E	O & E	Public Education & Awareness
3	Flood	Property owners are responsible for finding out whether their structures are in the floodplain.	Final FIRMs will be shown on the town GIS as a new layer when released in 2013.	N	O & E, DP	Public Education & Awareness

ID	Hazard	Problem	Recommended Action	New/ Existing	Goal	Type
7	Flood, erosion	Town roads and homes in steep areas are threatened by erosion. Additionally, access by emergency vehicles can be compromised by heavy or frequent rainfall.	Staff will bring draft regulations for driveway standards on steep slopes to the Board of Selectmen for consideration.	N	DP, CRP	Prevention
12	Flood, washout	The NE section of Bodge Hill Road crosses the floodplain as well as having some steep sections; the road could be compromised by heavy or frequent rainfall.	Conduct regular ditch maintenance to mitigate the flow of water alongside Bodge Hill Road.	E	DP	Long-term Continuity
11	Flood, washout	Sections of Ossipee Park Road have steep side slopes; the road could be compromised by heavy/frequent rainfall. This is the primary road for tractor-trailers making deliveries to and from Castle Springs Water Bottling.	Conduct erosion repair on the steep slopes of Ossipee Park Road. Install a bituminous curb to concentrate water to a closed drainage system.	E	DP	Structural Project
13	Flood, washout	Sunrise Drive and Robin Lane cross flood-prone areas and have undersized drainage; access to properties at the end of the road (approximately 50) can be limited by heavy or frequent rainfall.	Engage in a conversation with the homeowners' associations (along Sunrise Drive and Robin Lane) regarding maintenance of roads and drainage.	E	O & E	Public Education & Awareness
16	Flood/ Dam failure	The Class B state dam at Lake Kanasatka does have a Dam Emergency Plan.	Understand the dam emergency plan and maintain communication with the owners (NH DES).	E	C & C	Public Education & Awareness
15	HazMat Transport	The town's waterbodies, commercial area, and schools are threatened by the large number of vehicles transporting hazardous materials along NH Route 25, especially at Sheridan Road and in the Village area.	Take steps to raise the profile in the State's Ten-Year Plan of NH Route 25 intersections at Sheridan Road and in the Village. Recommended improvements include signage, signaling, and road/intersection configurations to increase safety at these high risk intersections.	E	O & E	Public Education & Awareness

ID	Hazard	Problem	Recommended Action	New/ Existing	Goal	Type
18	High Winds and Ice	Downed limbs and trees can block roads. Several areas of town have limited road access including Balmoral - Paradise Drive and Moultonborough Neck - Moultonborough Neck Road.	Work with homeowner associations, especially in Balmoral and along Moultonborough Neck to trim and cut back vegetation, reducing the likelihood of blockage.	E	O & E	Public Education & Awareness
19	High Winds and Ice	Downed limbs and trees can block roads. Several areas of town have limited road access along Moultonborough Neck.	Work with homeowner associations, especially along Moultonborough Neck to develop gated Emergency Access Routes.	E	O & E	Public Education & Awareness
17	Lightning	All town electronics, including the communications network are vulnerable to damage from lightning.	Investigate protection of the following critical facilities against power surges: Public Safety Building, Town Hall, Public Works, and Moultonborough Neck Fire Station.	E	DP	Long-term Continuity
21	Transportation Incident	Ossipee Park Road has a steep grade and is the primary road for tractor-trailers making deliveries to and from Castle Springs Water Bottling. A loaded semi could lose control on the way down and impact vehicles on NH Route 171.	Investigate the construction of a runaway truck ramp on Ossipee Park Road.	E	CRP	Structural Project
20	Winter Weather	Currently the town clears all roads (municipal and private) with the assistance of local contractors. During a very heavy storm many contractors will not be able to get the smaller roads clear.	Work with private road associations throughout town to educate and meet minimum road standards for the private roads. These standards include things such as road widths, road base, and clear zones.	E	O & E	Public Education & Awareness

The Committee identified the various costs and benefits associated with each action. The estimated cost represents what the town estimates it will cost in terms of dollars or staff hours to implement each action. Table 16 shows the costs as well as the various benefits and costs associated with each action.

Table 16: Mitigation Actions by Hazard Type – Estimated Cost & Pros/Cons

ID	Hazard	Problem	Recommended Action	Estimated Cost	Comment	Pros	Cons
2	All hazards	No emergency information records are located at the Secondary EOC. In the rare case that the Primary EOC is compromised, limited information would be available.	Keep duplicate emergency information records at Town Hall.	10 hours Staff Time		Would enhance the transition from Primary to Secondary EOC.	Sensitive information needs to be kept secure and information needs to be kept up to date.
6	All hazards	There are some areas of town (Bean Road, Harvard Camp Road, Swamp Road to Sandwich T/L, and Moultonborough Neck Road near station) that do not have reliable radio communication. During any hazard event emergency personnel might need to communicate with others.	Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 1 - Conduct a propagation study (with soft estimate for implementation).	$10,000	Have met federal 2013 Interoperability requirements. Gaps still exist; currently unacceptable communications.	Improved reliability, coordination, and response of emergency personnel.	Entails legal, technological, and cost hurdles.
6A	All hazards	There are some areas of town (Bean Road, Harvard Camp Road, Swamp Road to Sandwich T/L, and Moultonborough Neck Road near station) that do not have reliable radio communication. During any hazard event emergency personnel might need to communicate with others.	Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 2 - Work towards implementation of recommendations of the Step 1 Study (contingent upon funding).	Unknown – This depends upon the findings of Step 1 (Project #6)			
1	All hazards	More than 20,000 people may be without electronic communications throughout town, especially during a wind or ice event.	Obtain access to additional traffic response equipment and trailer capability (up to four) to serve as message boards along main roads.	$60,000	Code Red is a new, useful tool for communicating with residents and visitors.	Works on the main arterial roadways	Can be expensive and may get only limited use. Consider rentals or sharing.

ID	Hazard	Problem	Recommended Action	Estimated Cost	Comment	Pros	Cons
8	All hazards	If Lakes Region Water is compromised, approximately 750 residences will be without water. This could happen with any hazard event.	Develop an understanding and working relationship to partner with the private water utility to share information regarding contingency plans.	± 10 hours Staff Time	Monitor the requirements of the Public Utilities Commission. Arrangements should include non-potable water.	Town will be better able to respond to residents' questions if service is compromised.	
9	All hazards	If Bay District Sewer system is compromised, an unknown number of residences and businesses will be without sewage services. This could happen with any hazard event.	Develop an understanding and working relationship to partner with the sewer utility to share information regarding contingency plans.	± 10 hours Staff Time	Unplanned releases have occurred (Lakeshore Drive). The town does not know the number of homes and businesses connected to the system. The infrastructure runs along town right-of-ways.	Town will be better able to respond to residents' questions if service is compromised.	
4	All hazards	Ice and heavy winds can bring down power lines. There is a high probability that these hazard events will occur throughout town.	Staff will bring regulations to the Planning Board for consideration requiring underground cables for new development.	± 20 hours Staff Time		Could significantly reduce power outages and the associated costs.	Could add to the initial development costs.
5	Fire	The town has 90 dry hydrants throughout town that require maintenance; many are on private property.	Create and implement dry hydrant maintenance plan.	15 hours Staff Time + $15,000/ year ($75,000)	Wording is under review by Town Counsel.	Enables a better maintained system.	Need agreements with private landowners.

ID	Hazard	Problem	Recommended Action	Estimated Cost	Comment	Pros	Cons
10	Fire	Approximately 175 residences on the NW side of Long Island are vulnerable to wildfire due to geography, fuel supply, and limited access.	Reach out to the homeowners associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.	± 80 hours Staff Time		A low cost effort that can reduce the area's vulnerability to costly fire. Could reduce the CRS rating.	
14	Flood	Properties at the end of Kim's Alley along the lake flood when lake levels rise. Other properties in low-lying areas can experience damage during a heavy rain.	Provide education and outreach to homeowners regarding flood proofing their property.	± 16 hours Staff Time		Low cost outreach.	
3	Flood	Property owners are responsible for finding out whether their structures are in the floodplain.	Final FIRMs will be shown on the town GIS as a new layer when released in 2013.	$1,000 - >$5,000		Information will be more accessible.	
7	Flood, erosion	Town roads and homes in steep areas are threatened by erosion. Additionally, access by emergency vehicles can be compromised by heavy or frequent rainfall.	Staff will bring draft regulations for driveway standards on steep slopes to the Board of Selectmen for consideration.	± 20 hours Staff Time		Mitigates the impacts of erosion on town roads. Reduce the need for town to do work on private driveways.	A recent effort referencing state guidelines recently encountered much resistance.
12	Flood, washout	The NE section of Bodge Hill Road crosses the floodplain as well as having some steep sections; the road could be compromised by heavy or frequent rainfall.	Conduct regular ditch maintenance to mitigate the flow of water alongside Bodge Hill Road.	$1,000/ year plus staff and equipment ($5,000)			

ID	Hazard	Problem	Recommended Action	Estimated Cost	Comment	Pros	Cons
11	Flood, washout	Sections of Ossipee Park Road have steep side slopes; the road could be compromised by heavy/frequent rainfall. This is the primary road for tractor-trailers making deliveries to and from Castle Springs Water Bottling.	Conduct erosion repair on the steep slopes of Ossipee Park Road. Install a bituminous curb to concentrate water to a closed drainage system.	$85,000	The road was rebuilt in 2008. Erosion occurred here in 2011. Funds are in the current budget.	Reduces damage to municipal infrastructure. Reduces the likelihood of a vehicular accident.	Cost
13	Flood, washout	Sunrise Drive and Robin Lane cross flood-prone areas and have undersized drainage; access to properties at the end of the road (approximately 50) can be limited by heavy or frequent rainfall.	Engage in a conversation with the homeowners' associations (along Sunrise Drive and Robin Lane) regarding maintenance of roads and drainage.	Outreach - 10 hours/ year (50 hours) Staff Time	These are private roads.	Improvements by the associations could reduce the risk of residents being isolated. Low cost outreach.	
16	Flood/ Dam failure	The Class B state dam at Lake Kanasatka does have a Dam Emergency Plan.	Understand the dam emergency plan and maintain communication with the owners (NH DES).	5 hours/ year (25 hours) Staff Time	Not a threat to life or property, except NH Route 25.		
15	HazMat Transport	The town's waterbodies, commercial area, and schools are threatened by the large number of vehicles transporting hazardous materials along NH Route 25, especially at Sheridan Road and in the Village area.	Take steps to raise the profile in the State's Ten-Year Plan of NH Route 25 intersections at Sheridan Road and in the Village. Recommended improvements include signage, signaling, and road/intersection configurations to increase safety at these high risk intersections.	± 30 hours/ year (±150 hours) Staff Time	Identified in NH Route 25 Corridor Study and Plan NH Charrette. Currently working on Fox Hollow intersection.	Can reduce the risk to humans, the environment, and properties.	Involves a state highway and can be costly.

ID	Hazard	Problem	Recommended Action	Estimated Cost	Comment	Pros	Cons
18	High Winds and Ice	Downed limbs and trees can block roads. Several areas of town have limited road access including Balmoral - Paradise Drive and Moultonborough Neck - Moultonborough Neck Road.	Work with homeowner associations, especially in Balmoral and along Moultonborough Neck to trim and cut back vegetation, reducing the likelihood of blockage.	± 50 hours/ year (±250 hours) Staff Time	Numerous private, dead-end roads.	Could improve emergency response times.	
19	High Winds and Ice	Downed limbs and trees can block roads. Several areas of town have limited road access along Moultonborough Neck.	Work with homeowner associations, especially along Moultonborough Neck to develop gated Emergency Access Routes.	± 40 hours (±200 hours) Staff Time	Numerous private, dead-end roads. A slight error in response location can lead to significant delays due to limited road connectivity.	Could improve emergency response times.	Perception that traffic will increase.
17	Lightning	All town electronics, including the communications network are vulnerable to damage from lightning.	Investigate protection of the following critical facilities against power surges: Public Safety Building, Town Hall, Public Works, and Moultonborough Neck Fire Station.	± 50 hours Staff Time	PD had to replace most of its electronics earlier this year due to a lightning strike.	Maintains continuity of information and communication systems.	Could be very expensive.
21	Transportation Incident	Ossipee Park Road has a steep grade and is the primary road for tractor-trailers making deliveries to and from Castle Springs Water Bottling. A loaded semi could lose control on the way down and impact vehicles on NH Route 171.	Investigate the construction of a runaway truck ramp on Ossipee Park Road.	$5,000 for study		Could reduce that likelihood of an accident.	Could be expensive.
20	Winter Weather	Currently the town clears all roads (municipal and private) with the assistance of local contractors. During a very heavy storm many contractors will not be able to get the smaller roads clear.	Work with private road associations throughout town to educate and meet minimum road standards for the private roads. These standards include things such as road widths, road base, and clear zones.	± 50 hours/ year (±250 hours) Staff Time		Improves awareness of the situation and clarifies public expectations. Relatively low cost.	

E. PRIORITIZATION OF ACTIONS

After considering the Pros and Cons of each project, the Committee began to prioritize the various projects which had been identified. Committee members decided to adapt the standard prioritization tool to better reflect the concerns of the community and strengths of the Committee. The tool that came out of this process includes separate scores for the Cost of Implementation and the Economic Benefits to the community for each Action and has the acronym STALEEC (See Appendix I for full details). Table 17 shows the Actions grouped by hazard type and then ordered by their overall score. Scores range from a high of 19.4 to a low of 13.8.

Table 17: Recommended Mitigation Actions by Hazard and in Ranked Order

ID	Hazard	Problem	Recommended Action	STALEEC TOTAL
2	All hazards	No emergency information records are located at the Secondary EOC. In the rare case that the Primary EOC is compromised, limited information would be available.	Keep duplicate emergency information records at Town Hall.	19.4
6	All hazards	There are some areas of town (Bean Road, Harvard Camp Road, Swamp Road to Sandwich T/L, and Moultonborough Neck Road near station) that do not have reliable radio communication. During any hazard event emergency personnel might need to communicate with others.	Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 1 - Conduct a propagation study (with soft estimate for implementation).	19.0
6A	All hazards	There are some areas of town (Bean Road, Harvard Camp Road, Swamp Road to Sandwich T/L, and Moultonborough Neck Road near station) that do not have reliable radio communication. During any hazard event emergency personnel might need to communicate with others.	Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 2 - Work towards implementation of recommendations of the Step 1 Study (contingent upon funding).	16.8
8	All hazards	If Lakes Region Water is compromised, approximately 750 residences will be without water. This could happen with any hazard event.	Develop an understanding and working relationship to partner with the private water utility to share information regarding contingency plans.	15.2
9	All hazards	If Bay District Sewer system is compromised, an unknown number of residences and businesses will be without sewage services. This could happen with any hazard event.	Develop an understanding and working relationship to partner with the sewer utility to share information regarding contingency plans.	15.2
1	All hazards	More than 20,000 people may be without electronic communications throughout town, especially during a wind or ice event.	Obtain access to additional traffic response equipment and trailer capability (up to four) to serve as message boards along main roads.	15.0
4	All hazards	Ice and heavy winds can bring down power lines. There is a high probability that these hazard events will occur throughout town.	Staff will bring regulations to the Planning Board for consideration requiring underground cables for new development.	14.4

ID	Hazard	Problem	Recommended Action	STALEEC TOTAL
10	Fire	Approximately 175 residences on the NW side of Long Island are vulnerable to wildfire due to geography, fuel supply, and limited access.	Reach out to the homeowners associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.	16.6
5	Fire	The town has 90 dry hydrants throughout town that require maintenance; many are on private property.	Create and implement dry hydrant maintenance plan.	16.4
14	Flood	Properties at the end of Kim's Alley along the lake flood when lake levels rise. Other properties in low-lying areas can experience damage during a heavy rain.	Provide education and outreach to homeowners regarding floodproofing their property.	17.6
3	Flood	Property owners are responsible for finding out whether their structures are in the floodplain.	Final FIRMs will be shown on the town GIS as a new layer when released in 2013.	15.2
7	Flood, erosion	Town roads and homes in steep areas are threatened by erosion. Additionally, access by emergency vehicles can be compromised by heavy or frequent rainfall.	Staff will bring draft regulations for driveway standards on steep slopes to the Board of Selectmen for consideration.	14.2
12	Flood, washout	The NE section of Bodge Hill Road crosses the floodplain as well as having some steep sections; the road could be compromised by heavy or frequent rainfall.	Conduct regular ditch maintenance to mitigate the flow of water alongside Bodge Hill Road.	17.4
11	Flood, washout	Sections of Ossipee Park Road have steep side slopes; the road could be compromised by heavy/frequent rainfall. This is the primary road for tractor-trailers making deliveries to and from Castle Springs Water Bottling.	Conduct erosion repair on the steep slopes of Ossipee Park Road. Install a bituminous curb to concentrate water to a closed drainage system.	15.8
13	Flood, washout	Sunrise and Sunset Drives, and Robin Lane cross flood-prone areas and have undersized drainage; access to properties at the end of the road (approximately 50) can be limited by heavy or frequent rainfall.	Engage in a conversation with the homeowners' associations (along Sunrise and Sunset Drives, and Robin Lane) regarding maintenance of roads and drainage.	13.8
16	Flood/ Dam failure	The Class B state dam at Lake Kanasatka does have a Dam Emergency Plan.	Understand the dam emergency plan and maintain communication with the owners (NH DES).	16.6
15	HazMat Transport	The town's waterbodies, commercial area, and schools are threatened by the large number of vehicles transporting hazardous materials along NH Route 25, especially at Sheridan Road and in the Village area.	Take steps to raise the profile in the State's Ten-Year Plan of NH Route 25 intersections at Sheridan Road and in the Village. Recommended improvements include signage, signaling, and road/intersection configurations to increase safety at these high risk intersections.	14.6

ID	Hazard	Problem	Recommended Action	STALEEC TOTAL
18	High Winds and Ice	Downed limbs and trees can block roads. Several areas of town have limited road access including Balmoral - Paradise Drive and Moultonborough Neck - Moultonborough Neck Road.	Work with homeowner associations, especially in Balmoral and along Moultonborough Neck to trim and cut back vegetation, reducing the likelihood of blockage.	16.6
19	High Winds and Ice	Downed limbs and trees can block roads. Several areas of town have limited road access along Moultonborough Neck.	Work with homeowner associations, especially along Moultonborough Neck to develop gated Emergency Access Routes.	16.0
17	Lightning	All town electronics, including the communications network are vulnerable to damage from lightning.	Investigate protection of the following critical facilities against power surges: Public Safety Building, Town Hall, Public Works, Moultonborough Neck Fire Station.	17.2
21	Transportation Incident	Ossipee Park Road has a steep grade and is the primary road for tractor-trailers making deliveries to and from Castle Springs Water Bottling. A loaded semi could lose control on the way down and impact vehicles on NH Route 171.	Investigate the construction of a runaway truck ramp on Ossipee Park Road.	14.4
20	Winter Weather	Currently the town clears all roads (municipal and private) with the assistance of local contractors. During a very heavy storm many contractors will not be able to get the smaller roads clear.	Work with private road associations throughout town to educate and meet minimum road standards for the private roads. These standards include things such as road widths, road base, and clear zones.	16.4

F. IMPLEMENTATION OF MITIGATION ACTIONS

There are many factors that influence how a town chooses to spend its energy and resources in implementing recommended actions. Factors include:

- Urgency
- How quickly an action could be implemented
- Likelihood that the action will reduce future emergencies
- Regulations required to implement the action
- Administrative burdens
- Time (both paid and volunteer)
- Funding availability
- Political acceptability of the action.

In the context of these factors, the Committee discussed the mitigation actions and utilized the STALEEC method (Appendix I) as a guide to reach consensus regarding their relative level of priority, recognizing that some actions are of greater priority to different town departments. This implementation schedule contains a matrix (Table 18) indicating the estimated cost of implementation, potential funding sources, the parties responsible for bringing about these actions, and implementation time frame. Though a number of recommended mitigation actions received high scores, the time frame for which the actions are executed depend upon staff time and budgetary limitations.

These are listed in order of their Time Frame. To keep the plan current, the implementation schedule should be updated and re-evaluated on a regular basis as outlined in the monitoring section of this plan.

Table 18: Implementation Schedule for Mitigation Actions

ID	Hazard	Problem	Recommended Action	STALEEC TOTAL	Estimated Cost	Potential Funding	Lead Party	Time Frame
12	Flood, washout	The NE section of Bodge Hill Road crosses the floodplain as well as having some steep sections; the road could be compromised by heavy or frequent rainfall.	Conduct regular ditch maintenance to mitigate the flow of water alongside Bodge Hill Road.	17.4	$1,000/ year plus staff and equipment ($5,000)	Operating Budget	DPW	Annual 2013 - 17

ID	Hazard	Problem	Recommended Action	STALEEC TOTAL	Estimated Cost	Potential Funding	Lead Party	Time Frame
18	High Winds and Ice	Downed limbs and trees can block roads. Several areas of town have limited road access including Balmoral - Paradise Drive and Moultonborough Neck - Moultonborough Neck Road.	Work with homeowner associations, especially in Balmoral and along Moultonborough Neck to trim and cut back vegetation, reducing the likelihood of blockage.	16.6	± 50 hours/ year (±250 hours) Staff Time	Operating Budget	DPW	Annual 2013 - 17
20	Winter Weather	Currently the town clears all roads (municipal and private) with the assistance of local contractors. During a very heavy storm many contractors will not be able to get the smaller roads clear.	Work with private road associations throughout town to educate and meet minimum road standards for the private roads. These standards include things such as road widths, road base, and clear zones.	16.4	± 50 hours/ year (±250 hours) Staff Time	Operating Budget	DPW	Annual 2013 - 17
15	HazMat Transport	The town's waterbodies, commercial area, and schools are threatened by the large number of vehicles transporting hazardous materials along NH Route 25, especially at Sheridan Road and in the Village area.	Take steps to raise the profile in the State's Ten-Year Plan of NH Route 25 intersections at Sheridan Road and in the Village. Recommended improvements include signage, signaling, and road/intersection configurations to increase safety at these high risk intersections.	14.6	± 30 hours/ year (±150 hours) Staff Time	Operating Budget	Town Admin., DPW	Annual 2013 - 17
13	Flood, washout	Sunrise Drive and Robin Lane cross flood-prone areas and have undersized drainage; access to properties at the end of the road (approximately 50) can be limited by heavy or frequent rainfall.	Engage in a conversation with the homeowners' associations (along Sunrise Drive and Robin Lane) regarding maintenance of roads and drainage.	13.8	Outreach - 10 hours/ year (50 hours) Staff Time	Operating Budget	EMD, DPW	Annual 2013 - 17
14	Flood	Properties at the end of Kim's Alley along the lake flood when lake levels rise. Other properties in low-lying areas can experience damage during a heavy rain.	Provide education and outreach to homeowners regarding floodproofing their property.	17.6	± 16 hours Staff Time	Operating Budget	Town Planner	mid-2013
2	All hazards	No emergency information records are located at the Secondary EOC. In the rare case that the Primary EOC is compromised, limited information would be available.	Keep duplicate emergency information records at Town Hall.	19.4	10 hours Staff Time	Operating Budget	EMD	2013

ID	Hazard	Problem	Recommended Action	STALEEC TOTAL	Estimated Cost	Potential Funding	Lead Party	Time Frame
11	Flood, washout	Sections of Ossipee Park Road have steep side slopes; the road could be compromised by heavy/frequent rainfall. This is the primary road for tractor-trailers making deliveries to and from Castle Springs Water Bottling.	Conduct erosion repair on the steep slopes of Ossipee Park Road. Install a bituminous curb to concentrate water to a closed drainage system.	15.8	$85,000	Capital Budget	DPW	2013
4	All hazards	Ice and heavy winds can bring down power lines. There is a high probability that these hazard events will occur throughout town.	Staff will bring regulations to the Planning Board for consideration requiring underground cables for new development.	14.4	± 20 hours Staff Time	Operating Budget	Town Planner	2013
21	Transportation Incident	Ossipee Park Road has a steep grade and is the primary road for tractor-trailers making deliveries to and from Castle Springs Water Bottling. A loaded semi could lose control on the way down and impact vehicles on NH Route 171.	Investigate the construction of a runaway truck ramp on Ossipee Park Road.	14.4	$5,000 for study	Operating Budget	Town Admin., Town Planner	2013
6	All hazards	There are some areas of town (Bean Road, Harvard Camp Road, Swamp Road to Sandwich T/L, and Moultonborough Neck Road near station) that do not have reliable radio communication. During any hazard event emergency personnel might need to communicate with others.	Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 1 - Conduct a propagation study (with soft estimate for implementation).	19.0	$10,000	Operating Budget	Police Chief	2014
17	Lightning	All town electronics, including the communications network are vulnerable to damage from lightning.	Investigate protection of the following critical facilities against power surges: Public Safety Building, Town Hall, Public Works, and Moultonborough Neck Fire Station.	17.2	± 50 hours Staff Time	Operating Budget	DPW	2014
16	Flood/ Dam failure	The Significant Hazard state dam at Lake Kanasatka does have a Dam Emergency Plan.	Understand the dam emergency plan and maintain communication with the owners (NH DES).	16.6	5 hours/ year (25 hours) Staff Time	Operating Budget	EMD	2014

ID	Hazard	Problem	Recommended Action	STALEEC TOTAL	Estimated Cost	Potential Funding	Lead Party	Time Frame
5	Fire	The town has 90 dry hydrants throughout town that require maintenance; many are on private property.	Create and implement dry hydrant maintenance plan.	16.4	15 hours Staff Time + $15,000/ year ($75,000)	Operating Budget	Fire Chief	2014
3	Flood	Property owners are responsible for finding out whether their structures are in the floodplain.	Final FIRMs will be shown on the town GIS as a new layer when released in 2013.	15.2	$1,000 - >$5,000	Operating Budget	Town Planner	2014
8	All hazards	If Lakes Region Water is compromised, approximately 750 residences will be without water. This could happen with any hazard event.	Develop an understanding and working relationship to partner with the private water utility to share information regarding contingency plans.	15.2	± 10 hours Staff Time	Operating Budget	Town Admin.	2014
1	All hazards	More than 20,000 people may be without electronic communications throughout town, especially during a wind or ice event.	Obtain access to additional traffic response equipment and trailer capability (up to four) to serve as message boards along main roads.	15.0	$60,000	HMPG, HSIP (Highway Safety Improvement Program)	Police, EMD	2014
7	Flood, erosion	Town roads and homes in steep areas are threatened by erosion. Additionally, access by emergency vehicles can be compromised by heavy or frequent rainfall.	Staff will bring draft regulations for driveway standards on steep slopes to the Board of Selectmen for consideration.	14.2	± 20 hours Staff Time	Operating Budget	Town Planner	2014
9	All hazards	If Bay District Sewer system is compromised, an unknown number of residences and businesses will be without sewage services. This could happen with any hazard event.	Develop an understanding and working relationship to partner with the sewer utility to share information regarding contingency plans.	15.2	± 10 hours Staff Time	Operating Budget	Town Admin.	2015
6A	All hazards	There are some areas of town (Bean Road, Harvard Camp Road, Swamp Road to Sandwich T/L, and Moultonborough Neck Road near station) that do not have reliable radio communication. During any hazard event emergency personnel might need to communicate with others.	Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 2 - Work towards implementation of recommendations of the Step 1 Study (contingent upon funding).	16.8	Unknown – This depends upon the findings of Step 1 (Project #6)	Operating Budget	Police Chief	2017

ID	Hazard	Problem	Recommended Action	STALEEC TOTAL	Estimated Cost	Potential Funding	Lead Party	Time Frame
19	High Winds and Ice	Downed limbs and trees can block roads. Several areas of town have limited road access along Moultonborough Neck.	Work with homeowner associations, especially along Moultonborough Neck to develop gated Emergency Access Routes.	16.0	± 40 hours (±200 hours) Staff Time	Operating Budget	EMD	2017
10	Fire	Approximately 175 residences on the NW side of Long Island are vulnerable to wildfire due to geography, fuel supply, and limited access.	Reach out to the homeowners associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.	16.6	± 80 hours Staff Time	Operating Budget	Fire Chief	Start - 2015 Finish - 2017

CHAPTER VI: PLAN ADOPTION AND MONITORING

A. IMPLEMENTATION

The Moultonborough Hazard Mitigation Plan Update Committee, established by the EMD and Board of Selectmen, will meet annually to review the Plan and provide a mechanism for ensuring that an attempt is made to incorporate the actions identified in the plan into ongoing town planning activities. Essential elements of implementation require that all responsible parties for the various recommendations understand what is expected of them, and that they are willing to fulfill their role in implementation. It is therefore important to have the responsible parties clearly identified when the town adopts the final plan. Where appropriate it would be helpful to have any hazard mitigation activities identified in job descriptions.

A Capital Reserve Fund for Hazard Mitigation projects may be established to set aside funding for the projects identified in the Hazard Mitigation Plan. The Hazard Mitigation Committee will work to with the Selectmen and Capital Improvements Plan (CIP) Committee to incorporate the various projects into subsequent budgets.

For those mitigation actions which involve either revisions to the Subdivision Regulations or development of regulations or standards, members of the Hazard Mitigation Committee will work with the Planning Board to develop appropriate language.

When appropriate, an effort will be made to incorporate this plan into the Emergency Operations Plan. Within a year after the town officially adopts the 2013 update to the Hazard Mitigation Plan, an attempt will be made to have hazard mitigation strategies integrated into these existing mechanisms and into all other ongoing town planning activities.

B. PLAN MAINTENANCE & PUBLIC INVOLVEMENT

The Moultonborough Hazard Mitigation Planning Committee and the Selectboard, in order to track progress and update the mitigation strategies identified in Chapter V - D & E, will review the Moultonborough Hazard Mitigation Plan every year or after a hazard event. Town of Moultonborough Emergency Management Director is responsible for initiating this review and needs to consult with members of the Moultonborough Committee identified in this Plan. Changes will be made to the Plan to accommodate projects that have failed, are no longer consistent with the timeframe identified, are no longer consistent with the community's priorities, or lack funding resources. Priorities that were not ranked high, but identified as potential mitigation strategies, will be reviewed during the monitoring and update of this Plan to determine feasibility of future implementation. In keeping with the process of adopting the Plan, a public hearing will be held to receive public comment on the Plan.

Maintenance and updating will be held during the annual review period and the final product adopted by the Selectboard. The Committee will meet annually as part of this plan maintenance. The Emergency Management Director is also responsible for updating and resubmitting the plan to FEMA to be re-approved every five years. The EMD will convene a plan update committee in mid-2016 to begin updating this plan before it expires.

On behalf of the Hazard Mitigation Committee, the Emergency Management Director, under direction of the Selectboard, will be responsible for ensuring that town's departments and the public have adequate opportunity to participate in the planning process during the Plan's annual review and during any Hazard Mitigation Committee meetings. Administrative staff may be utilized to assist with the public involvement process.

For each committee meeting, and the annual update process, techniques that will be utilized for public involvement include:

- Provide invitations to Budget Committee members;
- Provide invitations to municipal department heads;
- Post notices of meetings at the Town Hall, Fire Station, Library, and on the town website;
- Submit press releases for publication in the *Granite State News*, *Laconia Daily Sun*, and other appropriate newspapers or media outlets.

Entities to invite to future Hazard Mitigation plan updates include the Emergency Management Directors of the neighboring communities of Tuftonboro, Ossipee, Tamworth, Sandwich, Center Harbor, and Meredith.

C. SIGNED CERTIFICATE OF ADOPTION

(Note: To be replaced with signed copy upon completion.)

Certificate of Adoption – Town of Moultonborough

A resolution adopting the Moultonborough Hazard Mitigation Plan Update 2013

Plan dated: 2013
Conditionally approved: _____

WHEREAS, the town of Moultonborough received funding from the NH Office of Homeland Security and Emergency Management under a Flood Mitigation Project Assistance Grant and assistance from the Lakes Region Planning Commission for the preparation of the Moultonborough Hazard Mitigation Plan Update 2013; and

WHEREAS, several public planning meetings were held between July and October 2013 regarding the development and review of the Moultonborough Hazard Mitigation Plan Update 2013; and

WHEREAS, the Moultonborough Hazard Mitigation Plan Update 2013 contains several potential future projects to mitigate hazard damage in the town of Moultonborough and,

WHEREAS, a duly noticed public meeting was held by the Selectmen on _____ 2013 to formally approve and adopt the Moultonborough Hazard Mitigation Plan Update 2013.

NOW, THEREFORE BE IT RESOLVED that the Moultonborough Board of Selectmen adopts the Moultonborough Hazard Mitigation Plan Update, 2013.

ADOPTED AND SIGNED this day of _____ 2013.

MOULTONBOROUGH BOARD OF SELECTMEN

_____ _____

Joel R. Mudgett, Chair Edward J. Charest, Selectman

_____ _____

Betsey L. Patten, Selectman Jonathan W. Tolman, Selectman

_____

Russell C. Wakefield, Selectman

Town Seal or Notary

_____

Date: _____

APPENDIX A: TECHNICAL RESOURCES

NH Homeland Security and Emergency Management 271-2231
http://www.nh.gov/safety/divisions/HSEM/
Hazard Mitigation Section 271-2231
http://www.nh.gov/safety/divisions/hsem/HazardMitigation/index.html

Federal Emergency Management Agency ..... (617) 223-4175
http://www.fema.gov/
FEMA, National Flood Insurance Program, Community Status Book
http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-status-book

NH Regional Planning Commissions:
Central NH Regional Planning Commission 796-2129
http://www.cnhrpc.org/
Lakes Region Regional Planning Commission 279-8171
http://www.lakesrpc.org/
Nashua Regional Planning Commission 883-0366
http://www.nashuarpc.org/
North Country Council 444-6303
http://www.nccouncil.org/
Rockingham Regional Planning Commission 778-0885
http://www.rpc-nh.org/
Southern New Hampshire Regional Planning Commission 669-4664
http://www.snhpc.org/
Southwest Regional Planning Commission 357-0557
http://www.swrpc.org/
Strafford Regional Planning Commission 742-2523
http://www.strafford.org/
Upper Valley Lake Sunapee Regional Planning Commission 448-1680
http://www.uvlsrpc.org/

NH Governor's Office of Energy and Planning 271-2155
http://www.nh.gov/oep/index.htm
New Hampshire Floodplain Management Program
http://www.nh.gov/oep/programs/floodplainmanagement/index.htm

NH Department of Transportation 271-3734
http://www.nh.gov/dot/index.htm

NH Department of Cultural Affairs 271-2540
http://www.nh.gov/nhculture/
Division of Historical Resources 271-3483
http://www.nh.gov/nhdhr/

NH Department of Environmental Services 271-3503
http://www.des.state.nh.us/
Dam Bureau 271-63406
http://www.des.state.nh.us/organization/divisions/water/dam/index.htm

NH Municipal Association 224-7447
http://www.nhmunicipal.org/LGCWebsite/index.asp

NH Fish and Game Department 271-3421
http://www.wildlife.state.nh.us/

NH Department of Resources and Economic Development 271-2411
http://www.dred.state.nh.us/
Division of Forests and Lands 271-2214
http://www.nhdfl.org/
Natural Heritage Inventory 271-2215
http://www.nhdfl.org/about-forests-and-lands/bureaus/natural-heritage-bureau/
Division of Parks and Recreation 271-3255
http://www.nhstateparks.org/

NH Department of Health and Human Services 271-9389
http://www.dhhs.state.nh.us/

Northeast States Emergency Consortium, Inc. (NESEC) ..... (781) 224-9876
http://www.nesec.org/

US Department of Commerce ..... (202) 482-2000
http://www.commerce.gov/
National Oceanic and Atmospheric Administration ..... (202) 482-6090
http://www.noaa.gov/
National Weather Service, Eastern Region Headquarters
http://www.erh.noaa.gov/
National Weather Service, Tauton, Massachusetts ..... (508) 824-5116
http://www.erh.noaa.gov/er/box/
National Weather Service, Gray, Maine ..... (207) 688-3216
http://www.erh.noaa.gov/er/gyx/

US Department of the Interior
http://www.doi.gov/
US Fish and Wildlife Service 225-1411
http://www.fws.gov/
US Geological Survey 225-4681
http://www.usgs.gov/
US Geological Survey Real Time Hydrologic Data
http://waterdata.usgs.gov/nwis/rt
US Army Corps of Engineers ..... (978) 318-8087
http://www.usace.army.mil/

US Department of Agriculture
http://www.usda.gov/wps/portal/usdahome
US Forest Service ..... (202) 205-8333
http://www.fs.fed.us/

New Hampshire Electrical Cooperative ..... (800) 698-2007
http://www.nhec.com/

Cold Region Research Laboratory 646-4187
http://www.crrel.usace.army.mil/

National Emergency Management Association ..... (859) 244-8000
http://nemaweb.org

National Aeronautics and Space Administration
http://www.nasa.gov/
NASA Optical Transient Detector – Lightning and Atmospheric Research
http://thunder.msfc.nasa.gov/

National Lightning Safety Institute
http://lightningsafety.com/

The Tornado Project Online
http://www.tornadoproject.com/

National Severe Storms Laboratory
http://www.nssl.noaa.gov/

Plymouth State University Weather Center
http://vortex.plymouth.edu/

APPENDIX B: MITIGATION FUNDING RESOURCES

There are numerous potential sources of funding to assist with the implementation of mitigation efforts. Two lists of state and federal resources are provided below. Some of these may not apply or be appropriate for Moultonborough. The NH Homeland Security and Emergency Management Field Representative for Carroll County can provide some assistance.

404 Hazard Mitigation Grant Program (HMGP) ..... NH Homeland Security and Emergency Management

406 Public Assistance and Hazard Mitigation ..... NH Homeland Security and Emergency Management

Community Development Block Grant (CDBG) ..... NH HSEM, NH OEP, also refer to RPC

Dam Safety Program ..... NH Department of Environmental Services

Disaster Preparedness Improvement Grant (DPIG) ..... NH Homeland Security and Emergency Management

Emergency Generators Program by NESEC ..... NH Homeland Security and Emergency Management

Emergency Watershed Protection (EWP) Program ..... USDA, Natural Resources Conservation Service

Flood Mitigation Assistance Program (FMAP) ..... NH Homeland Security and Emergency Management

Highway Safety Improvement Program ..... NH Department of Transportation

Mitigation Assistance Planning (MAP) ..... NH Homeland Security and Emergency Management

Mutual Aid for Public Works ..... NH Municipal Association

National Flood Insurance Program (NFIP) ..... NH Office of Energy & Planning

Power of Prevention Grant by NESEC ..... NH Homeland Security and Emergency Management

Project Impact ..... NH Homeland Security and Emergency Management

Roadway Repair & Maintenance Program(s) ..... NH Department of Transportation

Shoreline Protection Program ..... NH Department of Environmental Services

Various Forest and Lands Program(s) ..... NH Department of Resources & Economic Development

Wetlands Programs ..... NH Department of Environmental Services

Federal Mitigation Funding Sources

Federal Emergency Management Agency

Program	Details	Notes
Flood Mitigation Assistance Program (FMA)	Provides funding to implement measures to reduce or eliminate the long-term risk of flood damage http://www.fema.gov/government/grant/fma/index.shtm	States and localities
Hazard Mitigation Grant Program (HMGP)	Provides grants to implement long-term hazard mitigation measures after a major disaster declaration http://www.fema.gov/government/grant/hmgp/index.shtm	Open
National Flood Insurance Program (NFIP)	Enables property owners to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages http://www.fema.gov/business/nfip/	States, localities, and individuals
Pre-Disaster Mitigation Program (PDM)	Provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event http://www.fema.gov/government/grant/pdm/index.shtm	States, localities and tribal governments

Environmental Protection Agency

The EPA makes available funds for water management and wetlands protection programs that help mitigate against future costs associated with hazard damage.

Mitigation Funding Sources Program	Details	Notes
Clean Water Act Section 319 Grants	Grants for water source management programs including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and regulation. http://www.epa.gov/OWOW/NPS/cwact.html	Funds are provided only to designated state and tribal agencies
Clean Water State Revolving Funds	State grants to capitalize loan funds. States make loans to communities, individuals, and others for high-priority water-quality activities. http://www.epa.gov/owow/wetlands/initiative/srf.html	States and Puerto Rico
Wetland Program Development Grants	Funds for projects that promote research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. http://www.epa.gov/owow/wetlands/initiative/#financial	See website

National Oceanic and Atmosphere Administration (NOAA)

NOAA is the major source for mitigation funding related to coastal zone management and other coastal protection projects.

Mitigation Funding Sources Program	Details	Notes
Coastal Services Center Cooperative Agreements	Funds for coastal wetlands management and protection, natural hazards management, public access improvement, reduction of marine debris, special area management planning, and ocean resource planning. http://www.csc.noaa.gov/funding/	May only be used to implement and enhance the states' approved Coastal Zone Management programs
Coastal Services Center Grant Opportunities	Formula and program enhancement grants for implementing and enhancing Coastal Zone Management programs that have been approved by the Secretary of Commerce. http://www.csc.noaa.gov/funding/	Formula grants require non-federal match
Coastal Zone Management Program	The Office of Ocean and Coastal Resource Management (OCRM) provides federal funding and technical assistance to better manage our coastal resources. http://coastalmanagement.noaa.gov/funding/welcome.html	Funding is reserved for the nation's 34 state and territory Coastal Zone Management Programs
Marine and Coastal Habitat Restoration	Funding for habitat restoration, including wetland restoration and dam removal. http://www.nmfs.noaa.gov/habitat/recovery/	Funding available for state, local and tribal governments and for- and non-profit organizations.

Floodplain, Wetland and Watershed Protection Programs

USACE and the U.S. Fish and Wildlife Service offer funding and technical support for programs designed to protect floodplains, wetlands, and watersheds.

Funding and Technical Assistance for Wetlands and Floodplains Program	Details	Notes
USACE Planning Assistance to States (PAS)	Fund plans for the development and conservation of water resources, dam safety, flood damage reduction and floodplain management. http://www.lre.usace.army.mil/planning/assist.html	50 percent non-federal match
USACE Flood Plain Management Services (FPMS)	Technical support for effective floodplain management. http://www.lrl.usace.army.mil/p3md-o/article.asp?id=9&MyCategory=126	See website
USACE Environmental Laboratory	Guidance for implementing environmental programs such as ecosystem restoration and reuse of dredged materials. http://el.erdc.usace.army.mil/index.cfm	See website
U.S. Fish & Wildlife Service Coastal Wetlands Conservation Grant Program	Matching grants to states for acquisition, restoration, management or enhancement of coastal wetlands. http://ecos.fws.gov/coastal_grants/viewContent.do?viewPage=home	States only. 50 percent federal share
U.S. Fish & Wildlife Service Partners for Fish and Wildlife Program	Program that provides financial and technical assistance to private landowners interested in restoring degraded wildlife habitat. http://ecos.fws.gov/partners/viewContent.do?viewPage=home	Funding for volunteer-based programs

Housing and Urban Development

The Community Development Block Grants (CDBG) administered by HUD can be used to fund hazard mitigation projects.

Mitigation Funding Sources Program	Details	Notes
Community Development Block Grants (CDBG)	Grants to develop viable communities, principally for low and moderate income persons. CDBG funds available through Disaster Recovery Initiative. http://www.hud.gov/offices/cpd/communitydevelopment/programs/	Disaster funds contingent upon Presidential disaster declaration
Disaster Recovery Assistance	Disaster relief and recovery assistance in the form of special mortgage financing for rehabilitation of impacted homes. http://www.hud.gov/offices/cpd/communitydevelopment/programs/dri/assistance.cfm	Individuals
Neighborhood Stabilization Program	Funding for the purchase and rehabilitation of foreclosed and vacant property in order to renew neighborhoods devastated by the economic crisis. http://www.hud.gov/offices/cpd/communitydevelopment/programs/neighborhoodspg/	State and local governments and non-profits

Bureau of Land Management

The Bureau of Land Management (BLM) has two technical assistance programs focused on fire mitigation strategies at the community level.

Mitigation Funding Sources Program	Details	Notes
Community Assistance and Protection Program	Focuses on mitigation/prevention, education, and outreach. National Fire Prevention and Education teams are sent to areas across the country at-risk for wildland fire to work with local residents. http://www.blm.gov/nifc/st/en/prog/fire/community_assistance.html	See website
Firewise Communities Program	Effort to involve homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire before a fire starts. http://www.firewise.org/	See website

U.S. Department of Agriculture

There are multiple mitigation funding and technical assistance opportunities available from the USDA and its various sub-agencies: the Farm Service Agency, Forest Service, and Natural Resources Conservation Service.

Mitigation Funding Sources Agency Program	Details	Notes
USDA Smith-Lever Special Needs Funding	Grants to State Extension Services at 1862 Land-Grant Institutions to support education-based approaches to addressing emergency preparedness and disasters. http://www.csrees.usda.gov/funding/rfas/smith_lever.html	Population under 20,000
USDA Community Facilities Guaranteed Loan Program	This program provides an incentive for commercial lending that will develop essential community facilities, such as fire stations, police stations, and other public buildings. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population under 20,000
USDA Community Facilities Direct Loans	Loans for essential community facilities. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population of less than 20,000
USDA Community Facilities Direct Grants	Grants to develop essential community facilities. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population of less than 20,000
USDA Farm Service Agency Disaster Assistance Programs	Emergency funding and technical assistance for farmers and ranchers to rehabilitate farmland and livestock damaged by natural disasters. http://www.fsa.usda.gov/	Farmers and ranchers
USDA Forest Service National Fire Plan	Funding for organizing, training, and equipping fire districts through Volunteer, State and Rural Fire Assistance programs. Technical assistance for fire related mitigation. http://www.forestsandrangelands.gov/	See website
USDA Forest Service Economic Action Program	Funds for preparation of Fire Safe plans to reduce fire hazards and utilize byproducts of fuels management activities in a value-added fashion. http://www.fs.fed.us/spf/coop/programs/eap/	80% of total cost of project may be covered
USDA Natural Resources Conservation Service Emergency Watershed Protection Support Services	Funds for implementing emergency measures in watersheds in order to relieve imminent hazards to life and property created by a natural disaster. http://www.nrcs.usda.gov/programs/ewp/	See website
USDA Natural Resources Conservation Service Watershed Protection and Flood Prevention	Funds for soil conservation; flood prevention; conservation, development, utilization and disposal of water; and conservation and proper utilization of land. http://www.nrcs.usda.gov/programs/watershed/index.html	See website

Health and Economic Agencies

Alternative mitigation programs can be found through health and economic agencies that provide loans and grants aimed primarily at disaster relief.

Federal Loans and Grants for Disaster Relief Agency Program	Details	Notes
Department of Health & Human Services Disaster Assistance for State Units on Aging (SUAs)	Provide disaster relief funds to those SUAs and tribal organizations who are currently receiving a grant under Title VI of the Older Americans Act. http://www.aoa.gov/doingbus/fundopp/fundopp.asp	Areas designated in a Disaster Declaration issued by the President
Economic Development Administration (EDA) Economic Development Administration Investment Programs	Grants that support public works, economic adjustment assistance, and planning. Certain funds allocated for locations recently hit by major disasters. http://www.eda.gov/AboutEDA/Programs.xml	The maximum investment rate shall not exceed 50 percent of the project cost
U.S. Small Business Administration Small Business Administration Loan Program	Low-interest, fixed rate loans to small businesses for the purpose of implementing mitigation measures. Also available for disaster damaged property. http://www.sba.gov/services/financialassistance/index.html	Must meet SBA approved credit rating

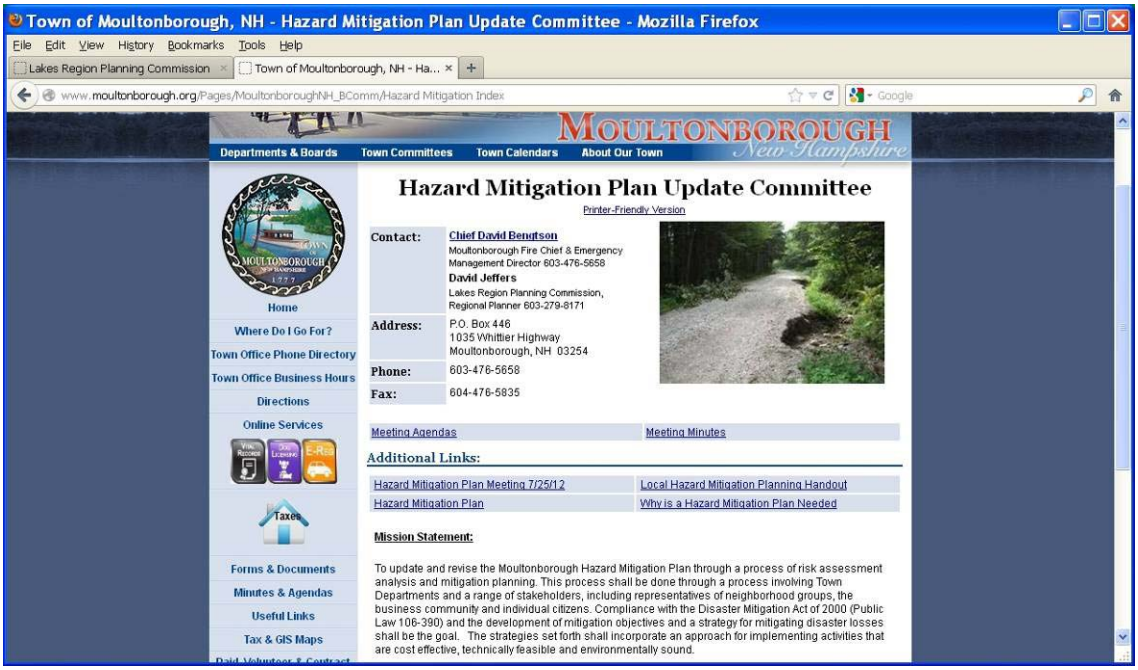
Research Grants

The United States Geological Survey (USGS) and the National Science Foundation (NSF) provide grant money for hazard mitigation-related research efforts.

Hazard Mitigation Research Grants Agency Program	Details	Notes
National Science Foundation (NSF) Decision, Risk, and Management Sciences Program (DRMS)	Grants for small-scale, exploratory, high-risk research having a severe urgency with regard to natural or anthropogenic disasters and similar unanticipated events. http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5423&org=SES	See website
U.S. Geological Survey (USGS) National Earthquake Hazards Reduction Program	The purpose of NEHRP is to provide products for earthquake loss reduction to the public and private sectors by carrying out research on earthquake occurrence and effects. http://www.usgs.gov/contracts/nehrp/	Community with a population under 20,000

APPENDIX C: PUBLICITY AND INFORMATION

Committee meetings were announced on the town of Moultonborough webpage calendar. Press releases similar to the one below were sent to the weekly *Carroll County Independent* and daily *Laconia Daily Sun* newspapers prior to the Committee meetings (page 66). A webpage for the Hazard Mitigation Update Committee was established which included a description of the Committee's purpose, several informational handouts (pages 68 - 71), the 2007 Hazard Mitigation Plan, meeting agendas, and meeting notes. One citizen did post video of most of the committee meetings on a local blog http://moultonborospeaks.blogspot.com/. In addition to a press release announcing the opportunity for public review, the town published a public notice in two issues of the *Meredith News*. The town also included an announcement of the public review period in its email notification which reaches approximately three hundred individuals.


Town of Moultonborough, NH - Hazard Mitigation Plan Update Committee - Mozilla Firefox
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Lakes Region Planning Commission
Town of Moultonborough, NH - Ha...
www.moultonborough.org/Pages/MoultonboroughNH_BComm/Hazard Mitigation Index
MOULTONBOROUGH New Hampshire
Departments & Boards
Town Committees
Town Calendars
About Our Town
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Where Do I Go For?
Town Office Phone Directory
Town Office Business Hours
Directions
Online Services
Taxes
Forms & Documents
Minutes & Agendas
Useful Links
Tax & GIS Maps
Hazard Mitigation Plan Update Committee
Printer-Friendly Version
Contact:
Chief David Bengtson
Moultonborough Fire Chief & Emergency Management Director 603-476-5658
David Jeffers
Lakes Region Planning Commission, Regional Planner 603-279-8171
Address:
P.O. Box 446
1035 Whittier Highway
Moultonborough, NH 03254
Phone:
603-476-5658
Fax:
604-476-5835
Meeting Agendas
Meeting Minutes
Additional Links:
Hazard Mitigation Plan Meeting 7/25/12
Local Hazard Mitigation Planning Handout
Hazard Mitigation Plan
Why is a Hazard Mitigation Plan Needed
Mission Statement:
To update and revise the Moultonborough Hazard Mitigation Plan through a process of risk assessment analysis and mitigation planning. This process shall be done through a process involving Town Departments and a range of stakeholders, including representatives of neighborhood groups, the business community and individual citizens. Compliance with the Disaster Mitigation Act of 2000 (Public Law 106-390) and the development of mitigation objectives and a strategy for mitigating disaster losses shall be the goal. The strategies set forth shall incorporate an approach for implementing activities that are cost effective, technically feasible and environmentally sound.


Town of Moultonborough, NH - Hazard Mitigation Plan Update Agendas - Mozilla Firefox
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GRANIT
Lakes Region Planning Commission
Town of Moultonborough, NH - Ha...
www.moultonborough.org/Pages/MoultonboroughNH_BComm/HazMitAgenda/
MOULTONBOROUGH New Hampshire
Departments & Boards
Town Committees
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Town Office Phone Directory
Town Office Business Hours
Directions
Online Services
Taxes
Forms & Documents
Hazard Mitigation Plan Update Agendas
Printer-Friendly Version
Web Pages and Documents:
Web Page
Details
Size
Hazard Mitigation Plan Update Meeting Agenda 09-12-2012
Mon, Sep 10, 2012 3:45 PM
265K
Hazard Mitigation Plan Update Meeting Agenda 09-05-2012
Fri, Aug 31, 2012 8:41 AM
316K
Hazard Mitigation Plan Update Meeting Agenda 08-22-2012
Tue, Aug 21, 2012 10:40 AM
99K
Hazard Mitigation Plan Update Meeting Agenda 08-06-2012
Tue, Aug 7, 2012 8:46 AM
266K
Hazard Mitigation Plan Update Meeting Agenda 08-01-2012
Tue, Jul 31, 2012 8:30 AM
268K
Hazard Mitigation Plan Update Meeting Agenda 07-25-2012
Mon, Jul 23, 2012 9:45 AM
104K

LAKES REGION PLANNING COMMISSION

103 Main Street, Suite #3
Meredith, NH 03253
tel (603) 279-8171
fax (603) 279-0200
www.lakesrpc.org

July 20, 2012

For Immediate Release

Contact: David Jeffers, 279-8171, djeffers@lakesrpc.org

Town of Moultonborough Hazard Mitigation Plan Meeting

The Moultonborough Hazard Mitigation Plan Committee will begin the process of updating its 2007 Hazard Mitigation Plan. The committee, which is represented by a variety of local interests, will focus on the natural and manmade hazards that put Moultonborough at risk as well as the development of recommendations to protect the safety and well being of town residents. The committee will have its first meeting on July 25, 2012 at the Ernest Davis Meeting Room at the Moultonborough Town Hall, 6 Holland Street starting at 9:00 AM. Residents of Moultonborough and representatives from neighboring communities are encouraged to attend and provide input.

Hazard Mitigation Planning is as important to reducing disaster losses as are appropriate regulations and land use ordinances. The most significant areas of concern for Moultonborough will be determined as a result of this process. With the update to the Hazard Mitigation Plan, community leaders will be able to prioritize actions to reduce the impacts of these and other hazards. Community leaders want the town to be a disaster resistant community and believe that updating the Hazard Mitigation Plan will bring Moultonborough one step closer to that goal.

For more information please call Chief David Bengtson, Moultonborough Fire Chief and Emergency Management Director at 476-5658 or David Jeffers, Regional Planner, Lakes Region Planning Commission at 279-8171.

Notice of Public Review Period Hearing

Moultonborough's

Hazard Mitigation Plan Update (2013)

The Draft of the Town's Hazard Mitigation Plan Update for 2013 is now available for review and comment on the town's website www.moultonboroughnh.gov (click on Town Committees and then Hazard Mitigation Plan Update Committee) and at the Moultonborough Town Hall and Public Library on 6 Holland Street.

All questions and or comments should be directed to Mr. David Bengtson, Chief of Fire and Rescue Services and Emergency Management Director, at PO Box 446 1035 Whittier Highway Moultonborough, NH 03254-0446 or by fax at 1.603.476.2378 or by email to dbengtson@moultonboroughnh.gov such that they are received by the close of business on January 3, 2012.

The plan was prepared by the Moultonborough Hazard Mitigation Plan Update Committee with assistance from the staff at the Lakes Region Planning Commission.

Posted this 20th day of December, 2012.

/s/ Carter Terenzini
Town Administrator

Posted: Meredith News 12/20/12 & 12/27/12
Town Web and Bulletin Boards (7)

Local Hazard Mitigation Planning

Hazard Mitigation:

"Hazard Mitigation means any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards"

Questions to address:

- Where are potential hazards?
- What are the risks?
- What are we already doing?
- Where are the gaps?
- What actions can be taken?
- What actions are feasible?
- What are our priorities?
- How will these actions be implemented?
- How will the plan be monitored?

What is a Hazard Mitigation Plan?

In cooperation with the NH Bureau of Emergency Management (BEM), the Lakes Region Planning Commission (LRPC) is working with several of its member communities each year to develop local Hazard Mitigation Plans.

The Hazard Mitigation Plans are designed to address each particular community's vulnerability to natural and man-made hazards. The local plan serves as a means to reduce future losses from hazard events before they occur. This local initiative is guided by a community-based Hazard Mitigation Planning Committee, with the LRPC providing technical support. The structure for plan development is provided through the *Guide to Hazard Mitigation Planning for New Hampshire Communities* which ensures that the community has considered the content of the State of New Hampshire Hazard Mitigation (409) Plan.

MITIGATION PROCESS

- IDENTIFY HAZARDS
- PROFILE HAZARD EVENTS
- INVENTORY ASSETS
- ESTIMATE LOSSES
- PRIORITIZE ACTION STEPS
- ADOPT THE PLAN
- IMPLEMENTATION

Why create a plan?

Development of a local Hazard Mitigation Plan is a chance for the community to assess the hazards that have the potential to threaten residents and their property. It also gives the community an opportunity to identify at-risk populations as well as resources within the community that might be at risk. The committee can then explore a variety of steps that might be put into place to help the community reduce damage and loss.

Having a Hazard Mitigation Plan in place, enables many communities to allocate their resources more effectively. It can also be a useful tool for leveraging additional sources of funding in the event of a disaster.

Federal Emergency Management Agency (FEMA) Requirement:

In order for communities to be eligible for the full spectrum of mitigation program funding, local hazard mitigation plans must be approved by FEMA. The staff of LRPC attend semi-annual hazard mitigation meetings and training programs that are designed to expedite the approval process.

Frequently asked questions

- **What will a Hazard Mitigation Plan cost?**

Since this project is funded by the NH Bureau of Emergency Management, the only cost to the community is the dedication of committee members' time and energy.

- **How is a Hazard Mitigation Plan different from an Emergency Action Plan?**

Although there is some overlap, these are different plans, each serving a different function in helping a community to minimize the potential for damage and loss in a community.

Emergency Action Plans (EAP) identifies potential hazard events and the resources available to address them; it also addresses how a community responds to an emergency.

A Hazard Mitigation Plan (HMP) also identifies potential hazard events and community resources. However, an HMP looks at the situation in terms of prevention instead of response. Gaps in coverage, programs, and structural needs are analyzed and specific mitigation steps are recommended and potential funding sources are identified.

- **Is this a community plan, a state plan, or a federal plan?**

The state of New Hampshire does require that each community develop an HMP. Once a plan is approved by FEMA and adopted by the community, should there be a need for Federal Mitigation money, more funding would be available. However, local public involvement is required. The local Emergency Management Director or a committee of citizens should help in plan development; there should also be several public presentations where citizens can make recommendations, provide input, and participate in development of the plan. In the end, the Board of Selectmen need to approve the plan.

Alton dam breach, 1996

The Essentials

At a minimum, each local Hazard Mitigation Plan should contain the following sections:

- An evaluation of the potential hazards within the community
- A description and analysis of local, state, and federal hazard mitigation policies, programs, and capabilities to mitigate the identified hazards in the area
- Goals, objectives, strategies and actions to reduce long-term vulnerability to hazards
- An evaluation of the costs and benefits of the recommended mitigation projects.

Lakes Region Planning Commission
103 N. Main St., Suite #3
Meredith, NH 03253

(603) 279-8171 - phone
(603) 279-0200 - fax

L · R · P · C

State and Local Mitigation Planning

Building stronger and safer

Hazard mitigation planning is the process state, local and tribal governments use to identify risks and vulnerabilities associated with natural disasters and to develop long-term strategies for protecting people and property in future hazard events. The process results in a mitigation plan that offers a strategy for breaking the cycle of disaster damage, reconstruction and repeated damage and a framework for developing feasible and cost-effective mitigation projects. Under the Disaster Mitigation Act of 2000 (Public Law 106-390), State, local and Tribal governments are required to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance.

Reducing risks through mitigation planning

A hazard mitigation plan is a long-term strategy for reducing disaster losses. The planning process promoted by the Disaster Mitigation Act of 2000 is as important as the resulting plan because it encourages jurisdictions to integrate mitigation with day-to-day decision-making regarding land-use planning, floodplain management, site design and other functions.

Mitigation planning elements

- Public involvement – In addition to government agencies involved in incident management, floodplain management and economic development, the planning process usually involves a range of stakeholders, including representatives of neighborhood groups, civic organizations, academia, environmental groups, the business community and individual citizens. Involving stakeholders is essential to determining the most vulnerable populations and facilities in the community and to assuring community wide support for the plan.
- Risk assessment – A risk assessment is the process of identifying natural hazards and risks associated with them, including threats to public health and safety, property damage and economic loss. The assessment answers the fundamental question, "What would happen if a natural disaster occurred?" and provides a factual basis for the mitigation activities proposed in the strategy. The assessment includes a description of the type, location and extent of natural hazards; the jurisdiction's vulnerability to the hazards; and the type and numbers of buildings, infrastructure and critical facilities located in identified hazard areas.
- Mitigation strategy – Based on the risk assessment, State, local and Tribal governments develop mitigation goals and objectives and a strategy for mitigating disaster losses. The strategy sets forth an approach for implementing activities that are cost-effective, technically feasible and environmentally sound.

Hazard mitigation plan required to receive HMGP Project Grants

Local jurisdictions are required by federal law to have a FEMA-approved hazard mitigation plan in order to receive Pre-Disaster Mitigation (PDM) or Hazard Mitigation Grant Program (HMGP) project grant funding. However, in extraordinary circumstances, HMGP funds can be awarded to communities that agree to develop a hazard mitigation plan within 12 months of receiving the project grant. Every State has a FEMA-approved hazard mitigation plan, though many local jurisdictions still do not.

FEMA "FEMA's mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards."

Fact Sheet

State and Local Mitigation Planning

FEMA

Mitigation Examples

History shows that the physical, financial and emotional losses caused by disasters can be reduced significantly through mitigation planning. Mitigation focuses attention and resources on solving a particular problem (such as reducing repetitive flood losses) and thereby produces successive benefits over time. Through implementation of local floodplain ordinances, for example, it is estimated that $1.1 billion in flood damages are prevented annually.

Mitigation includes a broad range of activities designed to protect homes, schools, public buildings and critical facilities. Examples include the following types of projects:

- Adopting and enforcing more stringent building codes, flood-proofing requirements, seismic design standards, or wind-bracing requirements for new construction or the retrofit of existing buildings.
- Exceeding the National Flood Insurance Program (NFIP) floodplain management regulations by elevating structures above the base flood elevation (BFE) in high-risk areas.
- Adopting stricter development regulations and zoning ordinances that steer development away from areas subject to flooding, storm surge, or coastal erosion.
- Retrofitting public buildings, schools and critical facilities, such as police and fire stations, to withstand hurricane-strength winds or ground shaking from earthquakes.
- Using public funds to acquire damaged homes or businesses in flood-prone areas, demolish or relocate the structures and use the property for open space, wetlands, or recreational uses.
- Building community shelters and "safe rooms" to help protect people in public buildings and schools in hurricane- and tornado-prone areas.

Planning tool available for government agencies

FEMA has developed a number of planning tools to help government agencies develop mitigation plans. These include how-to guides, CD ROMs and online information about organizing a planning team, involving stakeholders, conducting risk assessments, evaluating potential mitigation measures, conducting benefit-cost analyses and other planning issues.

For more information

Please visit: http://www.fema.gov/plan/mitplanning/index.

For state name disaster recovery, visit www.fema.gov or your state Web-site.

FEMA

"FEMA's mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards."

APPENDIX D: MEETING AGENDAS AND NOTES

This section contains copies of the Committee meeting agendas, notes, and a summary of participation. All Committee meetings were held in the Moultonborough Town Hall. Agendas were developed by the LRPC planner and meetings were chaired by the Emergency Management Director. At each meeting the EMD specifically asked for public input.

Moultonborough Hazard Mitigation Plan Update Committee

July 25, 2012 – 9:00 AM
Ernest Davis Meeting Room at the
Moultonborough Town Hall, 6 Holland Street

AGENDA

1. Introductions
2. What is Hazard Mitigation Planning?
   a. Mitigation planning vs. emergency response planning
3. Purpose of Committee
4. Set schedule for future meetings
5. Discussion of Development Trends
6. Identify Critical Facilities on base map
7. Identify all hazards (past – especially since 2007 & potential) in Moultonborough and mark on map
   a. What are the hazards?
   b. What is at risk from those hazards (structures, infrastructure, areas of town, populations)?
8. Goals for next meeting:
   a. Risk Assessment, including data collection
   b. Man-made hazards
   c. Impact of hazards on Critical Facilities

Moultonborough Hazard Mitigation Plan Update Committee

August 1, 2012 – 9:00 AM
Ernest Davis Meeting Room at the
Moultonborough Town Hall, 6 Holland Street

AGENDA

1. Introductions
2. Risk Assessment
    a. Probability of Occurrence
    b. Asset Assessment
3. Existing Plans and Policies
4. Status of 2007 Mitigation Actions

Moultonborough Hazard Mitigation Plan Update Committee

August 8, 2012 – 9:00 AM
Ernest Davis Meeting Room at the
Moultonborough Town Hall, 6 Holland Street

AGENDA

1. Introductions
2. Public Input
3. Risk Assessment
    a. Asset Assessment
    b. Vulnerability
4. Status of 2007 Mitigation Actions
    a. Completed
    b. Delete – no longer pertinent
    c. Defer – still pertinent but not completed (why not completed?)
5. Problem Statements for Hazards
6. Public Input
7. Adjourn

Moultonborough Hazard Mitigation Plan Update Committee

August 22, 2012 – 9:00 AM
Ernest Davis Meeting Room at the
Moultonborough Town Hall, 6 Holland Street

AGENDA

1. Introductions
2. Public Input
3. Risk Assessment and Vulnerability
4. Problem Statements for Hazards
5. Potential Mitigation Actions
    a. Benefits and costs
6. Public Input
7. Adjourn

Moultonborough Hazard Mitigation Plan Update Committee

September 5, 2012 – 9:00 AM
Ernest Davis Meeting Room at the
Moultonborough Town Hall, 6 Holland Street

AGENDA

1. Introductions
2. Potential Mitigation Actions
    a. Costs and benefits
3. Prioritization
    a. STAPLEE
    b. Rating – Pros/Cons
4. Implementation
    a. Responsible Party
    b. Timeframe
    c. Potential Funding Sources
5. Public Input
6. Adjourn

Moultonborough Hazard Mitigation Plan Update Committee

September 12, 2012 – 9:00 AM
Ernest Davis Meeting Room at the
Moultonborough Town Hall, 6 Holland Street

AGENDA

1. Introductions
2. Prioritization
    a. Aggregate results of committee members
    b. Discussion of results
3. Implementation
    a. Timeframe
4. Development and review of Draft HMP Update
5. Public Input
6. Adjourn

Moultonborough Hazard Mitigation Plan (HMP) Update Committee Meeting
July 25, 2012

In Attendance:

Chief David Bengtson	Fire Department, Emergency Management Director (EMD)
Jody Baker	Police Department
Carter Terenzini	Town Administrator
Bruce Woodruff	Town Planner
Scott Kimmond	Department of Public Works, Assistant EMD
David Jeffers	Lakes Region Planning Commission (LRPC)
Bob Goffredo	Citizen
Hollis Austin	Citizen

After Introductions, the distinctions between Mitigation and Response planning were discussed, reviewed the plan development process, and discussed the committee's meeting schedule.

- Hazard mitigation is sustained action to reduce or eliminate long-term risk to people and property from hazards, NOT preparing for an impending event, immediate response, or short-term recovery; for example installing a larger culvert in advance as opposed to fixing a blown out culvert. (A two-page handout was provided to all.)
- An adopted HMP is a requirement for receiving FEMA funding for mitigation projects.
- The LRPC has been contracted by NH HSEM (Homeland Security and Emergency Management) to assist communities in updating their HMP, which require updating every five years. The funding for this program comes from FEMA (Federal Emergency Management Agency).
- The focus will be on any local changes that may have occurred in terms of hazards, facilities, and priorities since 2007.
- Since 2007 there have also been some changes to the elements that are required by FEMA with greater requirements for quantifying the potential impacts of hazards, more specifics about mitigation actions, their evaluation and implementation, and documentation of opportunities for public involvement.
- LRPC will facilitate meetings, research and map information, and write drafts of the plan.
- The committee is responsible for providing local information, brainstorming mitigation actions, and prioritizing those actions.
- The draft plan will be reviewed by the committee and the public, sent to NH HSEM and FEMA for review and conditional approval, and ultimately needs to be adopted by the Selectmen.

- Moultonborough's HMP was adopted in September of 2007. This committee will meet weekly at this same time in order to update the plan in a timely fashion.

Development Trends since 2007 were discussed.

- D. Jeffers read through data regarding population, building permit activity, and housing units collected from the Census and the Lakes Region Demographic Report showing a slight drop in population and some building permit activity over the past decade. M. Woodruff and C. Terenzini noted that there are some deficiencies in the data. They suggested that they could supply figures which more accurately reflect population and development activity.
- It was pointed out that while the year-round population of Moultonborough is between 4,000 and 5,000 residents, seasonal estimates range from 15,000 – 40,000 people and the town has to plan for such in its infrastructure.
- Working with the Planning Office, data will be gathered regarding new development in the past five years and where new development might be anticipated.

There were a few updates to the 2007 list of critical facilities:

- There is a new NH Electric Coop substation on Moultonborough Neck Road. There are now generators at the Transfer Station and Town Offices.
- The Lions Club property should be added to the list.
- The updated plan should address the fact that there are roughly 750 homes served by Lakes Region Water, a quasi-public utility.
- The Bay Sewer system is public and serves many of the commercial and some residential properties in town.

There was discussion of past and potential hazards and their impact on Moultonborough.

- D. Jeffers distributed a list of hazard events that have occurred in and around Moultonborough since 2007. Most were taken from the NOAA (National Oceanic and Atmospheric Administration) database. These included Flooding, high winds, and about three dozen snow/ice storms and a similar number of thunderstorm/wind events. Committee members and residents were asked to supplement or refine the list.
- Several people agreed with the list. There was discussion about the local pattern of storms as they pass through town.
- Downed limbs, trees, and wires due to winds and ice were emphasized.
- Wildland fire was not viewed as a high hazard, although Chief Bengtson noted that Long Island is an area of particular concern due to a high fuel load, geography, and a relatively dense population.
- It was noted that flooding and road washouts were limited to a few particular areas (Ossipee Park Road, Bodge Hill Road, Lee's Mills Road, Kim's Alley, and Shaker Jerry). It was noted that Moultonborough has a large number of private

roads and some of these, including Sunrise Drive in Balmoral and the subdivision near the airport have drainage problems.

- S. Kimmond brought up the high volume vehicles transporting petroleum products and other hazardous materials through Moultonborough. This is of particular concern due to the proximity of roads to waterbodies. The Village, Sheridan Road, and Lee's Mills Road were all mentioned as areas of concern.
- No physical damages have been reported due to earthquakes in the area.
- The potential for a pandemic to impact the community was discussed and seen primarily as a seasonal issue.

Other items:

- D. Jeffers asked several questions regarding existing documents, plans, maps, and policies which might be pertinent to hazard mitigation planning.
- Plans:
  - Local Emergency Operations Plan, 2009
  - School Emergency Plan, 2011
- Policies:
  - Work with Lakes Region Partnership for Public Health
  - Have Police, Fire, and Public Works mutual aid agreements
  - Department staffing
    - FD – 3 FT, 41 on-call (22 EMT)
    - PD – 11 FT, 2 PT (Department operates 24/7)
    - PWD – 14 FT, 4 seasonal
  - Administration – off-site back-up of electronic records, added the position of Town Planner, several emergency communication systems are now in place

Next meeting: 8/1/12

Moultonborough Hazard Mitigation Plan (HMP) Update Committee Meeting
August 1, 2012

In Attendance:

Chief Bengtson	Fire Department, Emergency Management Director (EMD)
Chief Wetherbee	Police Department
Carter Terenzini	Town Administrator
Bruce Woodruff	Town Planner
Jon Tolman	Board of Selectmen
David Jeffers	Lakes Region Planning Commission (LRPC)
Hollis Austin	Citizen

After Introductions, the committee reviewed the various hazards that could impact Moultonborough, focusing on the frequency of these events along with the potential impacts on the town.

- This review considered all hazards noted in the State HMP 2010 as well as those noted in the town's 2007 HMP. The committee was asked to consider whether others should be added to the list and whether any should be deleted because they do not impact Moultonborough.
  - While there are few dams in Moultonborough and dam failure is a low probability, the dam at Castle in the Clouds and Lake Kanasatka could give way and the potential impacts are moderate. The L. Kanasatka dam is state-owned and has a Dam Emergency Plan; the other is privately owned and does not have an Emergency Plan.
  - A couple of small areas were mentioned as having the potential for landslide either due to deforestation or as a result of a gravel cut. There would be minimal impact to homes.
  - Coastal flooding and snow avalanche were viewed as not applicable to Moultonborough due to geography. Chief Bengtson stated that there are no sizable "Fixed Hazardous Material" sites in town.
  - After some discussion it was agreed that radon should be in the plan.
- The committee was asked to consider the frequency of each event. High frequency was defined as occurring at least once every couple of years, moderate frequency is once every ten years, and low is once every 100 years.
- The Committee also discussed the potential impacts of an event on the structures, people, and the community's ability to respond.
  - While flooding occurs frequently in a few areas, it is quite limited in its impact.
  - Wildfires have been very infrequent. Due to limited development and logging, the impact of a fire on Red Hill would be minimal. Due to geography, fuel load, high density, high property values, and limited access, a fire on Long Island would be substantial.

- High winds that take down branches, trees, and power lines are frequent.
- Lightning strikes that cause damage are high frequency; Chief Wetherbee and Chief Bengtson pointed out that both EMS and society in general is now more dependent upon electronics for communications and other aspects of response. This year the Police Department had to replace most of their computers because of a lightning strike. Based on Code Red phone registrations, nearly 60% of homeowners in Moultonborough use a cell phone as their primary communication. Damage to one of the communications towers could hamper response efforts.
- While a pandemic/epidemic certainly could impact the community, Chief Bengtson pointed out that regional preparedness efforts have improved significantly in the past five years.

The committee also reviewed the list of Existing Protections from the 2007 HMP. Members clarified whether these plans, regulations, or policies are still in place, have been modified, or are no longer pertinent. Some new protections were also noted.

- Most of the Zoning and Subdivision Regulations are still in place. B. Woodruff will review and clarify a couple of particular elements. The town does now have a Steep Slopes Ordinance.
- Lakes Region Mutual Fire Aid is the supplementary communications system.
- Items removed:
  - Churchwood from "Sewer/Water Service"
  - Notification regarding septic systems
  - Staffing of Red Hill fire tower
  - Cell tower on M'boro Neck is completed
  - Regional HazMat truck is no longer stationed in Moultonborough
- There were some adjustments in percent certifications and staffing figures.
- The LRCT and Moultonborough Snowmobile trails have been mapped.
- The EOP was updated in 2009.
- There are generators in the Town Hall and the Transfer Station but not the Rec. Department.
- The Public Works Director has training in Debris Management.

Committee members were asked to review the list of 27 Mitigation Actions developed for the 2007 HMP. At the next meeting they will be asked to state whether the action has 1) been completed, 2) should be deleted (because it is no longer pertinent), or 3) should be deferred (because it is pertinent but has not been completed yet).

- As C. Terenzini will be unable to make the next meeting, he pointed to three unimplemented Mitigation Actions from the 2007 list which he views as not workable solutions.

- Develop a septic system maintenance/inspection/education program
- Develop a private roads agreement and maintenance plan
- Local sprinkler and life safety ordinance

The public was asked to provide input.

- H. Austin inquired about when public input would be taken. Chief Bengtson pointed out that input from members of the public regarding elements of the plan is welcome throughout the meeting. Future agendas will specify opportunities for public input. Mr. Austin also requested that the door to the meeting room be left open make it clear to people passing by that the meeting is open to the public.
- As EMD, Chief Bengtson is the head of this committee. The HMP Update Committee is responsible for updating this plan, LRPC will develop a draft of the plan which will be reviewed and edited by the committee. This draft will be put out for public review and comment. The revised plan will be sent to NH HESM and FEMA for review and confirmation that the plan incorporates all of the FEMA-required elements. The final plan must be adopted by the Board of Selectmen to ensure that the town is eligible to receive FEMA funds.
- D. Jeffers and Chief Bengtson reiterated that the hazard mitigation plan is required to be updated every five years and that the funds to do this work come from FEMA through NHHSEM. LRPC has a contract with HSEM to work with many of their 30 municipalities. There is no direct cost to the town other than staff time and no funds come through the town.
- People were also reminded that the town has set up a good webpage for the Hazard Mitigation Plan Update http://www.moultonborough.org/Pages/MoultonboroughNH_BComm/Hazard%20Mitigation%20Index where the existing plan, agendas, and other pertinent information can be found.
- H. Austen reported that citizen video of these meetings can be accessed on the web at MoultonboroSpeaks.

Next meeting: 8/8/12 at 9:00 AM in the Ernest Davis Meeting Room in the Moultonborough Town Hall. The public is encouraged to attend and participate.

Notes submitted by D. Jeffers 8/3/12

Moultonborough Hazard Mitigation Plan (HMP) Update Committee Meeting
August 8, 2012

In Attendance:

Chief Bengtson	Fire Department, Emergency Management Director (EMD)
Chief Wetherbee	Police Department
Carter Terenzini	Town Administrator
Bruce Woodruff	Town Planner
Jon Tolman	Board of Selectmen
Scott Kinmond	Department of Public Works, Assistant EMD
Joel Mudgett	Board of Selectmen
Susan Noyes	School Superintendent
David Jeffers	Lakes Region Planning Commission (LRPC)
Hollis Austin	Citizen

After Introductions, Public Input was received.

- Appreciation was expressed for steps taken to make the process even more accessible to the public.

The committee reviewed a handout outlining information from the Assessor's database and an example illustrating a method for estimating the impact of a hazard event.

- The Assessment data included the number of parcels and the value of land and structures throughout town. This was divided into three categories – residential, comm./indust./utility, and exempt (exempt structures were not shown separately).
- C. Terenzini pointed out that a figure should be supplied for the structures in the exempt category as it includes all of the public facilities.
- The development of the sample Asset Inventory for Flooding was discussed. It was pointed out that this is an effort to quantify the impact of a hazard event by making some broad assumptions.
- Committee members felt that the figure used to estimate the number of people impacted was too low because it does not account for the second home and seasonal populations.

The committee also reviewed the list of Proposed Mitigation Actions from the 2007 HMP. Committee members clarified whether these 27 Actions have been completed (in full or in part), whether they are no longer pertinent (delete), or whether they should be carried over to the updated plan (defer) – and why.

- Completed – Actions #1, 3, 5, 8, 9, 11, 13, , part of 20, 24, 25, 27
- Delete – Actions #6, 10, 12, 14, 16, 17, 18, 19, 21, 22, 26
- Defer – 2, 4, 7, 15, 20, 23.

Public input was again accepted – a couple of questions regarding the purpose and funding of the HMP update were asked along with sharing of information in the plan.

- This is a locally developed and adopted plan. It is a prerequisite for receiving Hazard Mitigation Planning funds from FEMA. It also serves as a useful local tool for identifying natural hazards and methods for mitigating the potential impacts of those hazards.
- Plan development costs are funded in part by a grant from FEMA (administered by NH HSEM) with match from LRPC. No funds passed through the town.
- This plan is to be developed with public input and review. The information in it is publicly available. This differs from the Local Emergency Operations Plan, which does contain sensitive information.

Next meeting: The 8/15/12 ended up being cancelled due to a scheduling problem. The next meeting will be held on 8/22/12 at 9:00 AM in the Ernest Davis Meeting Room in the Moultonborough Town Hall. The public is encouraged to attend and participate.

Notes submitted by D. Jeffers 8/16/12

Moultonborough Hazard Mitigation Plan (HMP) Update Committee Meeting
August 22, 2012

In Attendance:

Chief Bengtson	Fire Department, Emergency Management Director (EMD)
Chief Wetherbee	Police Department
Carter Terenzini	Town Administrator
Bruce Woodruff	Town Planner
Scott Kinmond	Department of Public Works, Assistant EMD
Joel Mudgett	Board of Selectmen
David Jeffers	Lakes Region Planning Commission (LRPC)
Hollis Austin	Citizen

After Introductions, Public Input was received.

- No Public Input was given.

Committee members reviewed the updated tables of assessments and population.

- The Assessment Table was seen as more complete.
- As FEMA does not have an official standard for estimating second home or seasonal occupancy, LRPC looked at what the town has used in the past as well as what similar communities have used as examples. The committee agreed to use the figure of 2.4 persons per household (pph) for year-round residences, 5.0 pph for second homes, and to estimate 2,000 persons in seasonal residences (summer camps, hotels, campgrounds).

The committee reviewed a table showing information about dams in Moultonborough; the data comes through the Dam Bureau at NH DES.

- There are nine dams listed as "Active"
- Five are Class AA (Non-Menace), Lee's Mills and Castle in the Clouds are Class A (Low Hazard), and Lake Kanasatka and Lamprey Sewage Lagoon are Class B (Significant Hazard).
- It was noted that some of the details in the table need updating. D. Jeffers will look into how this information should be updated.
- B. Woodward would like to see columns for Map and Lot Number for each dam for local records.
- There were questions about the status of the sewage lagoon and two hydropower dams listed as "Not Built".

The committee reviewed the list of 26 "Problems" which had been developed based on uncompleted actions from the 2006 HMP and prior discussions. Through discussion committee members generated Recommended Actions to address each Problem Statement.

- The wording of several problem statements was modified and a few were removed based on additional information.

Several questions were asked during public input regarding potential problems.

- Basement flooding near the Lions Club property -
- The old dump site – this is being mitigated
- Solar flares as a disruption to communications equipment – NH HSEM does notify EMD regarding anticipated events and provides guidelines to follow. The town has not experienced disruptions to date.

Next meeting: The next meeting will be held on 9/5/12 at 9:00 AM in the Ernest Davis Meeting Room in the Moultonborough Town Hall. The public is encouraged to attend and participate.

Notes submitted by D. Jeffers 8/29/12

Moultonborough Hazard Mitigation Plan (HMP) Update Committee Meeting
September 5, 2012

In Attendance:

Chief Bengtson	Fire Department, Emergency Management Director (EMD)
Carter Terenzini	Town Administrator
Bruce Woodruff	Town Planner
Scott Kinmond	Department of Public Works, Assistant EMD
David Jeffers	Lakes Region Planning Commission (LRPC)
Hollis Austin	Citizen
Nancy Wright	Citizen

After Introductions, Committee members reviewed the matrix of Mitigation Actions with Pros and Cons listed.

- Some edits were made to the wording of the Actions to clarify the indent.
- Committee members estimated the costs associated with implementation of each action either in terms of dollars or staff hours.
- In some cases, such as the posting of DFIRM maps on the town website, there is the potential for wide variation in the costs, depending on several factors.

The committee discussed prioritization of the Actions.

- There was discussion about the proposed STAPLEE method.
  - Limit the rating to one score per category.
  - Remove the "P" (Political) category.
  - Add a "C" for the Cost of Implementation
  - The "E" (Economic) should focus on the cost or benefit to the local economy and persons
- D. Jeffers will revise the sheet and determine an appropriate method of distribution and tabulation. Distribute by Friday, return by end of Monday.

The committee worked through part of the Implementation Matrix.

- Potential funding streams for each project were discussed
- The Lead Party for each project was also identified.
- After prioritization the Time Frame for implantation can be completed.

Several questions were asked during public input regarding:

- Required use of the STAPLEE method (suggested, not required – may be modified to address local needs)
- Maintenance of dry hydrants on private land
- Duplication of and reliable access to information in an emergency.

Next meeting: The next meeting will be held on 9/12/12 at 9:00 AM in the Ernest Davis Meeting Room in the Moultonborough Town Hall. The public is encouraged to attend and participate.
Notes submitted by D. Jeffers 9/11/12

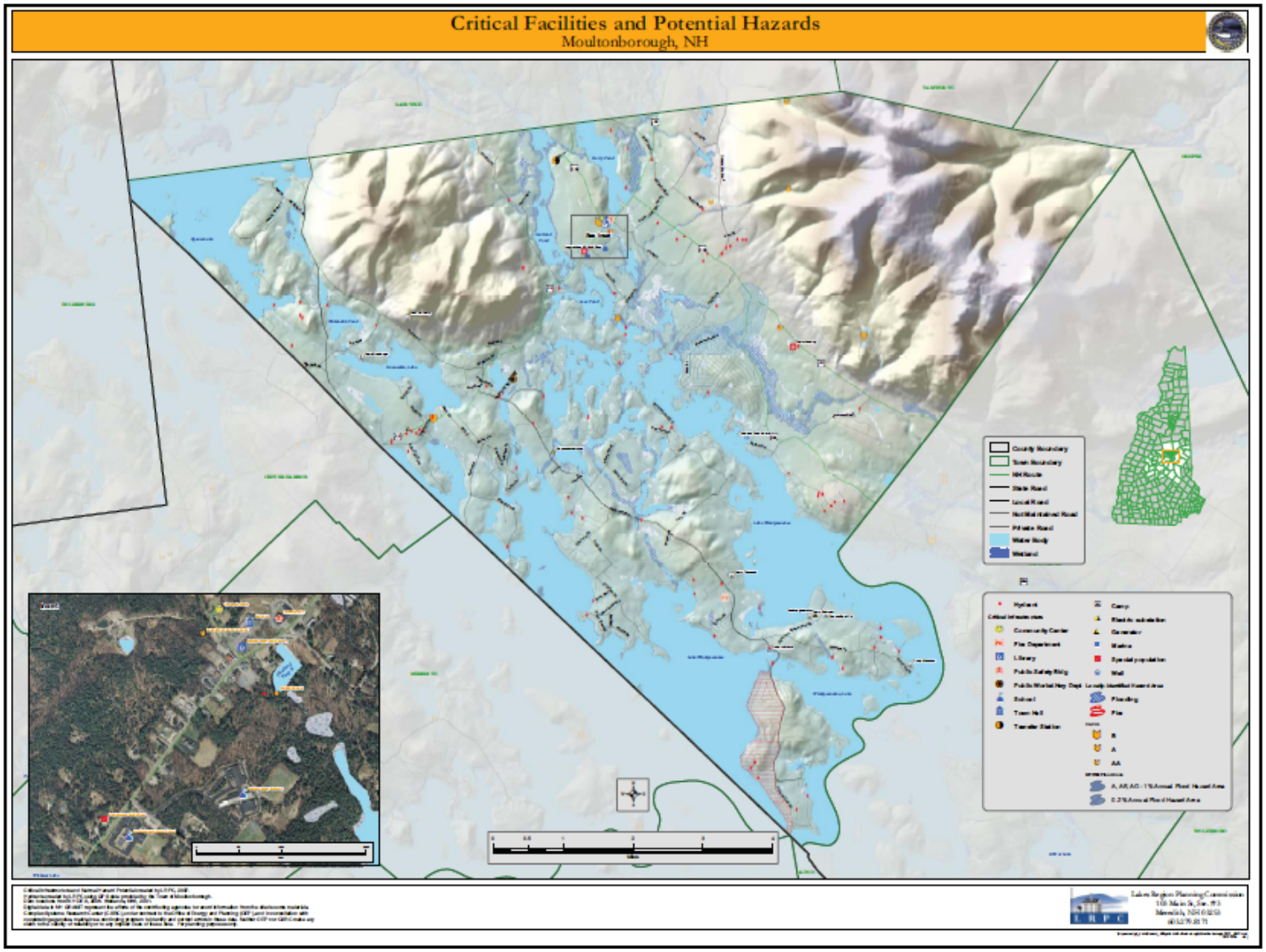
Committee Member	Position	7/25/12	8/1/12	8/8/12	8/22/12	9/5/12	9/12/12	12/12/12
David Bengtson	Fire Chief/EMD	X	X	X	X	X	X	X
Leonard Wetherbee	Police Chief		X	X		X	X	X
Bruce Woodruff	Town Planner	X	X	X	X	X	X	X
Carter Terenzini	Town Administrator	X	X	X	X	X	X	X
Jody Baker	Police Officer	X						
Scott Kinmond	Public Works	X		X	X	X	X	X
Susan Noyes	School District Superintendent	X		X			X	
Jon Tolman	Selectman		X	X			X	X
Donald Cahoon	Code Enforcement Officer							
Joel Mudgett	Selectman			X	X			X
Gary Karp	Assessor							
Others								
Hollis Austen	Citizen (videographer)	X	X	X	X	X	X	X
David Jeffers	Regional Planner	X	X	X	X	X	X	X

APPENDIX E: HAZARD EVENTS PRIOR TO 2007

Hazard	Date	Location	Description	Damages	Source
Earthquake	12/20/1940	Central NH	5.5 on Richter scale		NH OEM
Earthquake	12/24/1940	Central NH	5.5 on Richter scale		NH OEM
Flood	4/18/1997	Carroll County	Three to five inches of rain in 8 to 12 hours caused small rivers and streams to rise rapidly. Many roads were closed due to washouts and water over roadways, particularly near Somersworth and Rochester in Strafford County, Tamworth and Wolfeboro in southern Carroll County, and near Canaan in Grafton County. Some homes were evacuated.		NOAA
Flood	4/1/1998	Carroll County	3"- 8" of rain caused small rivers and streams to rise. Roads flooded and/or washed out.		NOAA
Flood	6/14/1998	Carroll County	3"- 8" of rain caused small rivers and streams to rise.		NOAA
Flood	5/13/2006	Carroll County	12 inches of rain in some locations in a 72 hour period.		NOAA
Hail	7/16/1984	Carroll County	1.75 inches in diameter		NOAA
Hail	6/24/1985	Carroll County	0.75 inches in diameter		NOAA
Hail	6/8/1987	Carroll County	0.75 inches in diameter		NOAA
Hail	6/13/1987	Carroll County	1.00 inches is diameter		NOAA
Hail	7/26/1994	Carroll County	0.75 in. hail accompanied by a very strong downburst from a thunderstorm. 150 other homes damaged and several cars crushed by felled trees. 140 acres of trees sustained damage. 1800 households lost power	>1.5 million	NOAA
Hail	7/18/2000	Moultonborough	0.75 inches in diameter		NOAA
Heavy Snow	2/14/1958	Carroll County	More than a foot of snow		NH OEM
Heavy Snow	3/2/1960	Carroll County	Upwards of 2' of snow; high winds		NH OEM
Heavy Snow	1/18/1961	Carroll County	Up to 25" of snow		NH OEM
Heavy Snow	2/22-28/1969	Statewide	98" in Western Central New Hampshire, 2' to 3' across New Hampshire		NH OEM
Heavy Snow	2/5/1978	Carroll County	More than 2' of snow - "Blizzard of '78"		NH OEM
Heavy Snow	1/31/1993	Carroll County	Up to 13 inches of snow. Communities experienced electrical power failures.		NOAA
Heavy Snow	1/17/1994	Statewide	75,000 Residents lost power		NOAA
Hurricane	9/21/1938	Statewide	13 Deaths, 2 Billion feet of marketable lumber blown down, flooding throughout the State,total Direct Losses - $12,337,643 (1938 Dollars)	$12,337,643.00	NH OEM
Ice	1/5/1979	Statewide	Power and Transportation disruptions		NH OEM
Ice	1/7/1998	Statewide	More than $17 million in power line damage alone	>17 million	NH OEM
Lightning	6/10/2005	Moultonborough	Lightning sparked a fire that destroyed a summer cottage on Lake Winnipesaukee's Badger Island. The lightning struck a nearby pine tree and ignited a ground fire as it traveled along the ground. The ground fire quickly spread to the cottage.	$30,000.00	NOAA

Hazard	Date	Location	Description	Damages	Source
Lightning	8/1/2005	Moultonborough	Lightning struck a two-story home that was under construction and ignited a fire that heavily damaged the structure. The lightning apparently struck a nearby 70-ft tall pine tree behind the home and traveled into the building.	$150,000.00	NOAA
Lightning	8/2/2005	Moultonborough	For the second night in a row, lightning struck a two-story home in Moultonborough. Fire flared up about 4 hours after the initial strike and caused considerable damage to the kitchen and a new addition.	$50,000.00	NOAA
Thunderstorm	7/26/1994	Carroll County	Thunderstorm Winds gusted as high as 82 mph near Moultonborough		NOAA
Thunderstorm	7/26/1994	Carroll County	$5 million in total cost.	$5,000,000.00	NOAA
Thunderstorm	7/6/1999	Moultonborough	Thunderstorm Winds gusted as high as 60 knots near Moultonborough		NOAA
Thunderstorm/Lightning	7/30/1999	Moultonborough	Lightning struck a tree in Moultonboro and followed an underground wire to a nearby historic post and beam barn where it ignited a fire. The fire caused moderate damage to the structure.		NOAA
Thunderstorm	6/20/2006	Moultonborough	Winds 50 knots, trees down		NOAA
Tornado	7/18/1963	Carroll County	F2 - $25,000 in damage	$25,000.00	NOAA
Tornado	8/7/1986	Carroll County	F1 - $250,000 in damage	$250,000.00	NOAA
Tornado	8/7/2001	Carroll County	F1 - $2.5 million in damage	$2,500,000.00	NOAA

APPENDIX F: CRITICAL FACILITIES & POTENTIAL HAZARDS MAP



APPENDIX G: HAZARDS – SUPPLEMENTARY HAZARD INFORMATION

This section provides statewide or regional information regarding hazards. Some information is about hazards mentioned in the NH Hazard Mitigation Plan. Other information either provides context or extra detail which supplements the locally important information addressed in Chapter III.

I. FLOOD, WILDFIRE, DROUGHT

Flooding

Historically, the state's two largest floods occurred in 1936 and 1938. The 1936 flood was associated with snow melt and heavy precipitation. The 1938 flooding was caused by the Great New England Hurricane of 1938. Those floods prompted the construction of a series of flood control dams throughout New England, built in the 1950s and '60s. They continue to be operated by the US Army Corps of Engineers.[29]

A series of floods in New Hampshire began in October 2005 with a flood that primarily affected the southwest corner of the state and devastated the town of Alstead. The flood killed seven people. It was followed by floods in May 2006 and April 2007 and a series of floods during the late summer and early fall of 2008. The most recent flooding in the region was aassociated with Tropical Storm Irene in September 2011.

Flooding in the Lakes Region is most commonly associated with structures and properties located within a floodplain. There are numerous rivers and streams within the region and significant changes in elevation, leading to some fast-moving water. The region also has a great deal of shoreline, making it exposed to rising water levels as well. Although historically, there have not been many instances of shoreline flooding, the potential always exists for a major flood event to occur.

Recent rain events have proven this is becoming an increasing concern as additional development is contributing to flood hazards. As areas are covered with impervious surfaces, less water is allowed to infiltrate, evaporate, or be transpired by vegetative growth and more of it runs off directly into surface drainages and water bodies. This increases the likelihood of flash floods and substantial overland flow. Of greatest concern are the waterfront properties on the lakes, ponds, and associated tributaries.

Culvert improvements and roadwork have been conducted throughout the region as a result of localized flooding events. Of particular concern in the region are areas of steep slopes and soils with limited capacity to accept rapid volumes of rainwater. Roads and culverts in close proximity to these conditions are most at risk of localized flooding.

Flooding due to Dam Failure

Dam failure results in rapid loss of water that is normally held back by a dam. These types of floods can be extremely dangerous and pose a threat to both life and property. Dam classifications in New Hampshire are based on the degree of potential damages that a failure or disoperation of the dam is

[29] http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html date visited: January 18, 2011

expected to cause. The classifications are designated as non-menace, low hazard, significant hazard, and high hazard and are summarized in greater detail in Table G-1.

The designations for these dams relate to damage that would occur if a dam were to break, not the structural integrity of the dam itself. In the Lakes Region, the Town of Alton was impacted by an earthen dam failure on March 12, 1996. Although listed in the NH Hazard Mitigation Plan as a significant hazard, it did result in the loss of one life.

Table G-1: New Hampshire Dam Classifications[30]

Classification	Description
Non-Menace	A dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property, provided the dam is: • Less than six feet in height if it has a storage capacity greater than 50 acre-feet; or • Less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.
Low Hazard	A dam that has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: • No possible loss of life. • Low economic loss to structures or property. • Structural damage to a town or city road or private road accessing property other than the dam owner's that could render the road impassable or otherwise interrupt public safety services. • The release of liquid industrial, agricultural, or commercial wastes, septage, or contaminated sediment if the storage capacity is less than two-acre-feet and is located more than 250 feet from a water body or water course. • Reversible environmental losses to environmentally-sensitive sites.
Significant Hazard	A dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following: • No probable loss of lives. • Major economic loss to structures or property. • Structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services. • Major environmental or public health losses, including one or more of the following: • Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair. • The release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated sediments if the storage capacity is 2 acre-feet or more. • Damage to an environmentally-sensitive site that does not meet the definition of reversible environmental losses.
High Hazard	A dam that has a high hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in probable loss of human life as a result of: • Water levels and velocities causing the structural failure of a foundation of a habitable residential structure or commercial or industrial structure, which is occupied under normal conditions. • Water levels rising above the first floor elevation of a habitable residential structure or a commercial or industrial structure, which is occupied under normal conditions when the rise due to dam failure is greater than one foot. • Structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services. • The release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 147-A:2 VII. • Any other circumstance that would more likely than not cause one or more deaths.

[30] NH DES Fact Sheet WD-DB-15 "Classification of Dams in New Hampshire", http://des.nh.gov/organization/commissioner/pip/factsheets/db/documents/db-15.pdf. Accessed October 1, 2012.

Ice Jam

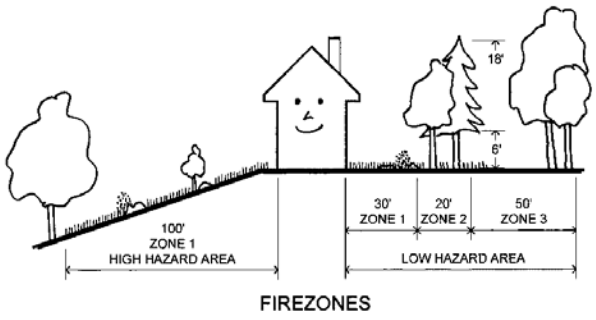
Ice forming in riverbeds and against structures often presents significant hazardous conditions for communities. Meltwater or stormwater may encounter these ice formations and apply lateral and/or vertical force upon structures. Moving ice may scour abutments and riverbanks. Ice may also create temporary dams. These dams can create flood hazard conditions where none previously existed. According to the Corps of Engineers Cold Regions Research and Engineering Laboratory (CRREL), 43% of New Hampshire ice jams have occurred in March and April during the ice breakup on the rivers, while 47% of ice jams occurred in January and February during either ice freeze up or ice break up periods.[31]

Wildfire

Several areas in the region are relatively remote in terms of access and fire fighting abilities. Of greatest concern are those areas characterized by steep slopes and vast woodlands, with limited vehicular access. These areas include the Ossipee, Squam, Belknap, and Sandwich Mountain Ranges. The islands in the region also pose a unique fire safety concern given that access is limited and most of the islands are predominately wooded with residential development. Most of the residential development on the islands is situated on the shores, and inland fire fighting capabilities are often limited.

As these once remote areas begin to see more development (the urban wildfire interface), care should be taken to ensure that adequate fire protection and buffers are established. Techniques include increased buffers between wooded areas and residential buildings, requirements for cisterns or fire ponds, a restriction on the types of allowable building materials such as shake roofs, and special considerations for landscaping. While historically massive wildfires have been western phenomena, each year hundreds of woodland acres burn in New Hampshire. The greatest risk exists in the spring when the snow has melted and before the tree canopy has developed, and in the late summer – early fall. Appropriate planning can significantly reduce a community's vulnerability for woodland fires. There are four-zone suggestions from the Firewise community program that could be potentially helpful for Moultonborough's homeowners.[32]

ZONE 4 is a natural zone of native or naturalized vegetation. In this area, use selective thinning to reduce the volume of fuel. Removing highly flammable plant species offers further protection while maintaining a natural appearance.



FIREZONES

ZONE 3 is a low fuel volume zone. Here selected plantings of mostly low-growing and fire-resistant plants provide a decreased fuel volume area. A few well-spaced, fire resistant trees in this zone can further retard a fire's progress.

ZONE 2 establishes a vegetation area consisting of plants that are fire resistant and low growing. An irrigation system will help keep this protection zone green and healthy.

[31] "Ice Jams in New Hampshire," CRREL, http://www.crrel.usace.army.mil/ierd/tectran/IERD26.pdf visited February 8, 2011

[32] http://www.firewise.org accessed September 21, 2012.

ZONE 1 is the protection area immediately surrounding the house. Here vegetation should be especially fire resistant, well irrigated and carefully spaced to minimize the threat from intense flames and sparks.

Conflagration

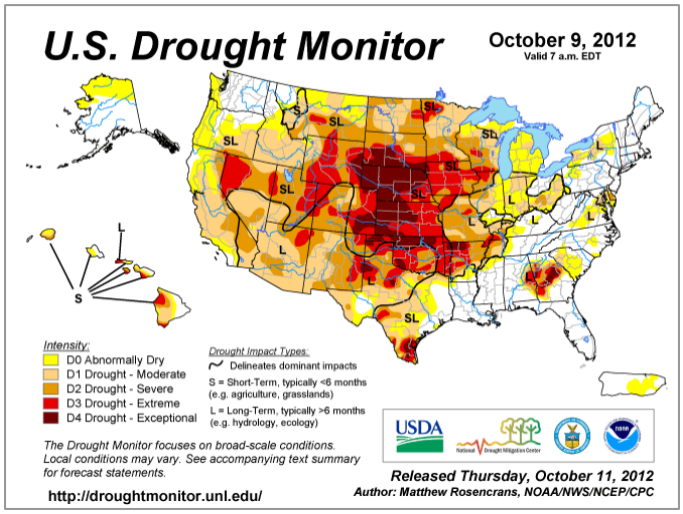
Conflagration is an extensive, destructive fire in a populated area that endangers lives and affects multiple buildings. Historically, many New Hampshire towns were settled in areas along waterways in order to power the mills. Often the town centers were at a low point in the topography, resulting in dense residential development on the steeper surrounding hillsides. Hillsides provide a natural updraft that makes fire fighting more difficult. In particular, structural fires spread more readily in hillside developments because burning buildings pre-heat the structures that are situated above them.

Alton Bay Christian Conference Center, 2009

Within the Lakes Region the city of Laconia was the site of one of the most devastating structural fires to occur in the state of New Hampshire. The 1903 Great Lakeport Fire consumed more than 100 homes; two churches, two factories, a large mill, a power plant, and a fire station. Wolfeboro's history includes a significant fire in the winter of 1956. This event is recognized as the last block fire in town and is considered a small conflagration. On April 12, 2009 the Alton Bay Christian Conference Center complex caught fire, resulting in an 11-alarm fire and destroying more that 40 structures.

Drought

Drought occurs when less than the normal amount of water is available for extended periods of time. Effects may include decreased soil moisture, groundwater levels, streamflow, and lake, pond, and well levels may drop. Factors that may contribute to drought include reduced rain/snowfall, increased rates of evaporation, and increased water usage. New Hampshire generally receives adequate rainfall; it is rare that the state experiences extended periods of below normal water supplies.



Since 1990 New Hampshire has had a state Drought Emergency Plan, which identifies four levels of action indicating the severity of the drought: Alert, Warning, Severe, and Emergency. There have been five extended droughts in New Hampshire in the past century: 1929 – 1936, 1939 – 1944, 1947 – 1950, 1960 – 1969, and 2001 – 2002.[33] While much of the country experienced drought conditions in 2012, New Hampshire received adequate precipitation.[34]

[33] http://des.nh.gov/organization/divisions/water/dam/drought/documents/historical.pdf visited February 8, 2011.
[34] US Drought Monitor http://droughtmonitor.unl.edu/. Accessed October 9, 2012.

II. GEOLOGICAL HAZARDS

Earthquake

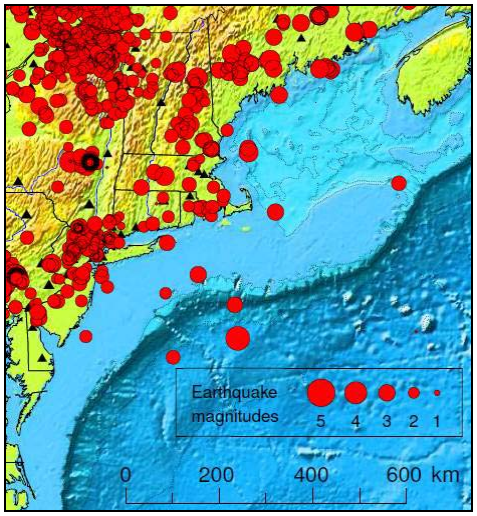
Notable New Hampshire earthquakes are listed in Table G-2 with the extent of the hazard expressed in the Modified Mercalli Intensity scale and the Richter Magnitude.[35]

Table G-2: NH Earthquakes of magnitude or intensity 4 or greater (1638-2007).

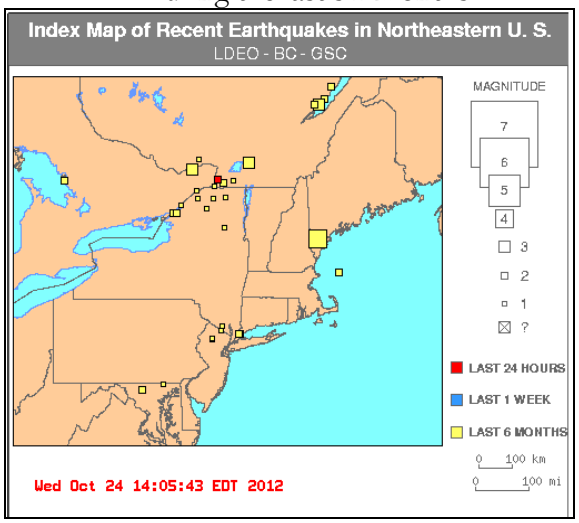
Location	Date	MMIntensity	Magnitude
Ossipee	December 24, 1940	7	5.5
Ossipee	December 20, 1940	7	5.5
Ossipee	October 9, 1925	6	4
Laconia	November 10, 1936	5	-
New Ipswich	March 18, 1926	5	-
Lebanon	March 5, 1905	5	-
Rockingham County	August 30, 1905	5	-
Concord	December 19, 1882	5	-
Exeter	November 28, 1852	5	-
Portsmouth	November 10, 1810	5	4
Off Hampton	July 23, 1823	4	4.1
15km SE of Berlin	April 6, 1989	-	4.1
5km NE of Berlin	October 20, 1988	-	4
W. of Laconia	January 19, 1982	-	4.7
Central NH	June 11, 1638	-	6.5

Earthquakes in the Northeast[36]

1990 – 2010



During the last six months



[35] http://earthquake.usgs.gov/learn/topics/mag_vs_int.php, visited June 8, 2012.

[36] Lamont-Doherty Cooperative Seismic Network http://www.ldeo.columbia.edu/LCSN/index.php, accessed October 24, 2012

Damage from an earthquake generally falls into two types; Structural and Nonstructural.

- **Structural Damage** is considered any damage to the load bearing components of a building or other structure.
- **Nonstructural Damage** is considered any portion not connected to the superstructure. This includes anything added after the frame is complete.

According to the NH Division of Homeland Security and Emergency Management, some of the issues likely to be encountered after a damaging earthquake could be:

- Total or partial collapse of buildings, especially un-reinforced masonry structures and those not built to seismic codes.
- Damage to roads and bridges from ground settlement and structural damage.
- Mass Causalities.
- Loss of electric power.
- Loss of telecommunication systems.
- Fires from gas line ruptures and chimney failures.
- Total or partial loss of potable and fire fighting water systems from pipe ruptures.
- Hazardous Material incidences.
- Loss of critical capabilities from structural and nonstructural damages.
- Lack of mutual aid support.

The NH HSEM also notes that a "cascade of disasters" typically occurs after a damaging earthquake. For example:

- Damage to gas lines and chimneys result in fires that are difficult to extinguish due to damage to the road, water systems, fire and police stations.
- Structural and Nonstructural damage cause many injuries, but because of damage to health care facilities and emergency response facilities, there is a slow or nonexistent response.
- Responders are slowed in their response because of Hazardous Material incidents.
- Flooding due to dam failures.

Landslide

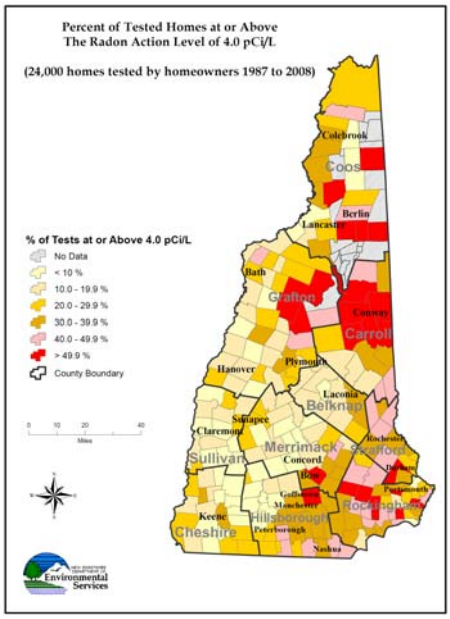
A landslide is the downward or outward movement of slope-forming materials reacting to the force of gravity, including mudflows, mudslides, debris flows, rockslides, debris avalanches, debris slides and earth flows. Landslides may be formed when a layer of soil atop a slope becomes saturated by significant precipitation and slides along a more cohesive layer of soil or rock. Seismic activity may play a role in the mass movement of landforms also. Although New Hampshire is mountainous, it consists largely of relatively old geologic formations that have been worn by the forces of nature for eons. Consequently, much of the landscape is relatively stable and the exposure to this hazard type is generally limited to areas in the north and north central portion of the state. Formations of sedimentary deposits and along the Connecticut and Merrimack Rivers also create potential landslide conditions.

Although the overall vulnerability for landslides in the state is low, there is considerable terrain susceptible to landslide action. This was exemplified in May of 2003 when the Old Man of the Mountain collapsed. The continuous action of freezing and thawing of moisture in rock fissures causes it to split and separate. This action occurs frequently on the steeply sloped areas of the state, increasing the risk of landslides. In addition to being susceptible to this freeze/thaw process, the Ossipee Mountain Range, Squam Range, and other mountains throughout the Lakes Region are also close to seismic faults and at risk to increased pressure to development. Consideration must be given

to the vulnerability of man-made structures in these areas due to seismic- and/or soils saturation-induced landslide activity. Landslide activities are also often attributed to other hazard events. For example, during a recent flood event, a death occurred when a mass of saturated soil collapsed. This death was attributed to the declared flood event.[37] Also, during the 2007 Nor'easter a landslide occurred in Milton, resulting in the temporary closure of NH Route 101.

Radon

Radon is a naturally occurring colorless, odorless radioactive gas usually associated with granite rock formations. The gas can seep into basements through the air. It can also be transported via water and is released once the water is aerated, such as during a shower. Extended exposure to radon can lead to higher rates of cancer in humans. Radon is not a singular event – it can take years or decades to see the effects. The NH Office of Community and Public Health's Bureau of Radiological Health indicates that one third of homes in New Hampshire have indoor radon levels that exceed the US Environmental Protection Agency's "action level" of 4 pCi/l.[38] The map at the right indicates that 10 – 20% of the homes in Moultonborough exceeded the recommended limit of 4.0 pCi/l in state-wide testing conduct over the past twenty years.[39]



III. Severe Wind

The Lakes Region is at risk of several types of natural events associated with high winds, including nor'easters, downbursts, hurricanes and tornadoes. The northeast is located in a zone that should be built to withstand 160 mile an hour wind gusts. A large portion of the northeast, including the Lakes Region, is in a designated hurricane susceptible region.

Tornado/Downburst

Although tornadoes are locally produced, damage paths can be in excess of one mile wide and 50 miles long.[40] The Fujita Scale is used to measure the intensity of a tornado (or downburst) by examining the damage caused in the aftermath, shown in Table G-3.[41] An F2 tornado ripped through a 50-mile section of central NH in July of 2008 from Epsom to Ossipee leading to requests for federal disaster declarations in several counties.[42]

[37] http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html visited February 8, 2011.
[38] http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html visited February 8, 2011.
[39] NH DES Radon Program http://des.nh.gov/organization/divisions/air/pehb/ehs/radon/index.htm, accessed October 9, 2012.
[40] FEMA Hazards: Tornadoes http://www.fema.gov/business/guide/section3e.shtm, visited February 8, 2011.
[41] http://www.tornadoproject.com/fscale/fscale.htm visited March 8, 2011.
[42] http://www.fema.gov/news/newsrelease.fema?id=45525 visited March 8, 2011.

Table G-3: The Fujita Scale

F-Scale #	Intensity Phrase	Wind Speed	Type of Damage
F0	Gale tornado	40-72 mph	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
F1	Moderate tornado	73-112 mph	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
F2	Significant tornado	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe tornado	158-206 mph	Roof and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted.
F4	Devastating tornado	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible tornado	261-318 mph	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged.
F6	Inconceivable tornado	319-379 mph	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies.

Source: http://www.tornadoproject.com/fscale/fscale.htm

The major damage from downbursts come from falling trees, which may take down power lines, block roads, or damage structures and vehicles. New Hampshire experienced three such events in the 1990s. One event occurred in Moultonborough on July 26, 1994 and was classified as a macroburst. It affected an area one-half mile wide by 4-6 miles in length.

Downed trees and power lines from the July 24, 2008 tornado.

The tornado/downburst risk for an individual community in New Hampshire is relatively low compared to many other parts of the country. Though the danger that these storms present may be high, the frequency of these storms is relatively low to moderate.

Hurricane

Hurricanes are severe tropical storms that have winds at least 74 miles per hour. In the Lakes Region they could produce heavy rain and strong winds that could cause flooding or damage buildings, trees, power lines, and cars.[43] Hurricanes are measured by the Saffir-Simpson Hurricane Scale: a 1-5 rating based on a hurricane's intensity using

[43] http://www.fema.gov/hazard/hurricane/hu_about.shtm, visited January 25, 2011.

wind speed as the determining factor (Table G-4). The scale is used to give an estimate of the potential property damage and flooding expected from a hurricane landfall.

Table G-4: Saffir-Simpson Hurricane Scale

Category	Characteristics
1	Winds 74-95 mph (64-82 kts or 119-153 km/hr). Storm surge generally 4-5 ft above normal. No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Some damage to poorly constructed signs. Also, some coastal road flooding and minor pier damage.
2	Winds 96-110 mph (83-95 kts or 154-177 km/hr). Storm surge generally 6-8 feet above normal. Some roofing material, door, and window damage of buildings. Considerable damage to shrubbery and trees with some trees blown down. Considerable damage to mobile homes, poorly constructed signs, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of the hurricane center. Small craft in unprotected anchorages break moorings.
3	Winds 111-129 mph (96-113 kts or 178-209 km/hr). Storm surge generally 9-12 ft above normal. Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures. Damage to shrubbery and trees with foliage blown off trees and large trees blown down. Mobile homes and poorly constructed signs are destroyed. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane. Flooding near the coast destroys smaller structures with larger structures damaged by battering from floating debris. Terrain continuously lower than 5 ft above mean sea level may be flooded inland 8 miles (13 km) or more. Evacuation of low-lying residences with several blocks of the shoreline may be required.
4	Winds 130-156 mph (114-135 kts or 210-249 km/hr). Storm surge generally 13-18 ft above normal. More extensive curtainwall failures with some complete roof structure failures on small residences. Shrubs, trees, and all signs are blown down. Complete destruction of mobile homes. Extensive damage to doors and windows. Low-lying escape routes may be cut by rising water 3-5 hours before arrival of the center of the hurricane. Major damage to lower floors of structures near the shore. Terrain lower than 10 ft above sea level may be flooded requiring massive evacuation of residential areas as far inland as 6 miles (10 km).
5	Winds greater than 156 mph (135 kts or 249 km/hr). Storm surge generally greater than 18 ft above normal. Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. All shrubs, trees, and signs blown down. Complete destruction of mobile homes. Severe and extensive window and door damage. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane. Major damage to lower floors of all structures located less than 15 ft above sea level and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5-10 miles (8-16 km) of the shoreline may be required.

Source: http://www.nhc.noaa.gov/aboutsshs.shtml

According to NOAA, 2010 was one of the busiest hurricane seasons on record.[44] However, the position of the jet stream kept the northeastern Atlantic region dry as a barrier to the storms. New Hampshire has not experienced a severe hurricane since 1938. On September 21, 1938, a Category 3 hurricane claimed 13 lives in New Hampshire and many more throughout New England. Official records at the Weather Bureau in Concord show sustained winds of 56 miles per hour, but around the state, gusts around 100 miles per hour were reported, mostly due to topographical acceleration. The Merrimack River rose nearly 11 feet above its flood stage, *The Hanover Gazette* reported that in New Hampshire, 60,000 people were homeless and many areas were without power. Damages were estimated at $22 million.[45] Hurricane Bob, a category 2 storm, in 1991, was declared a major federal disaster in New Hampshire and is recorded as a severe storm in the state's history.[46]

[44] http://www.noaanews.noaa.gov/stories2010/20101129_hurricaneseason.html visited January 25, 2011.
[45] http://www.nh.gov/safety/divisions/hsem/NaturalHazards/index.html, visited January 25, 2011.
[46] http://www.fema.gov/news/event.fema?id=2118 visited January 25, 2011

Lightning

Thunderstorms have several threats associated with them including heavy rain, high wind, and hail. In a heavy rain storm, large amounts of rain may fall in a short period of time, severely impacting roads and low-lying developments. The discharge of lightning causes an intense sudden heating of air. The air rapidly expands when heated then contracts as it cools, causing a shock wave that we hear as thunder. This shock wave is sometimes powerful enough to damage windows and structures. Lightning damages cost the insurance industry more than $5 billion annually in the United States.[47]

Hail

High winds can bring down limbs and trees, knocking out electricity and blocking roads. Hail can cause damage to crops and structural damage to vehicles. Hail is measured by the TORRO intensity scale, shown in Table G-5. Although hailstorms are not particularly common in the Lakes Region, which averages fewer than two hailstorms per year, several have occurred in New Hampshire in the last few years. In 2007 and 2008 nearby Laconia experienced hail storms with no resulting damage, though reported hail sizes were as large as 1.25 inches (H4).

Table G-5: TORRO Hailstorm Intensity Scale

Code	Diameter	Description	Typical Damage
H0	5-9 mm*	Pea	No damage
H1	10-15 mm	Mothball	Slight damage to plants, crops
H2	16-20 mm	Marble, grape	Significant damage to fruit, crops, vegetation
H3	21-30 mm	Walnut	Severe damage to fruit/crops, damage to glass/plastic structures, paint & wood scored
H4	31-40 mm	Pigeon's egg	Widespread glass damage, vehicle bodywork damage
H5	41-50 mm	Golf ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	51-60 mm	Hen's egg	Aircraft bodywork dented, brick walls pitted
H7	61-75 mm	Tennis ball	Severe roof damage, risk of serious injuries
H8	76-90 mm	Large orange	Severe damage to aircraft bodywork
H9	91-100 mm	Grapefruit	Extensive structural damage. Risk of severe or fatal injuries to exposed persons
H10	>100 mm	Melon	Extensive structural damage. Risk of severe or fatal injuries to exposed persons

***mm** = millimeters (Approximate range since other factors (e.g. number, density of hailstones, hail fall speed, surface wind speed) affect severity
Source: http://www.torro.org.uk/torro/severeweather/hailscale.php

V. OTHER HAZARDS

The Lakes Region, as its name suggests, is comprised of many surface water bodies. Many of the towns in the region depend on a portion of this resource to provide public drinking water to the community. Area tourism and water recreation are also highly dependent on the availability of clean and attractive water resources. For these reasons the protection of surface and ground waters in the Lakes Region is highly valued both as a necessity and for economic reasons. The leading potential sources of water contamination include in-transit and fixed hazardous materials.

Motor Vehicle Accident involving Hazardous Materials

Hazardous materials, i.e., chemicals and chemical compounds in many forms, are found virtually everywhere - in common household products; agricultural fertilizers and pesticides; carried by vehicles as fuels, lubricants, and transported products; and, used in business and industrial processes. When improperly used, released, or spilled, they can burn or explode, diffuse rapidly through the air or in water, and endanger those who come in contact with them.

[47] *National Lightning Safety Institute webpage,* http://www.lightningsafety.com/nlsi_lls/nlsi_annual_usa_losses.htm visited February 8, 2011.

Chemicals of all types are used, stored, and transported throughout the Lakes Region. The types and locations of many of these hazardous materials are unknown. While the New Hampshire Department of Environmental Services maintains a database of hazardous waste generators and underground storage tanks located in the state, detailed information on the types and volume of hazardous materials that are transported through the region is not documented. Likewise, only a small portion of the stored hazardous materials are reported and cataloged. Thus, there is a potential of a hazardous material incident at every transportation accident or fire in the area. Further, there is extensive use of liquefied gases for heating in the area, which means that significant amounts are transported, by both vehicle and major gas pipelines, and stored in the region.

APPENDIX H: CRITICAL FACILITIES-VULNERABILITY

Facility/Infrastructure	Lightning	Winter Weather (Blizzard/Snow Storm, Ice Storm, Nor'easter)	Severe Wind Event (Tornados, Downburst, Hurricane)	Flood	Wild Land Fire	Motor Vehicle Accident involving Hazardous Materials	Dam Failure	Earthquake	Epidemic
Moultonborough Central School	High	High	Moderate	Low	Low	High	Low	Low	Moderate
Moultonborough Academy	High	High	Moderate	Low	Low	Low	Low	Low	Moderate
Moultonborough Safety Building	High	Moderate	Moderate	Low	Low	High	Low	Low	Low
Moultonborough Neck Fire Station	Low	Moderate	Moderate	Low	Moderate	High	Low	Low	Low
Town Hall	Moderate	Moderate	Moderate	Low	Low	Low	Low	Low	Low
Highway Garages	Moderate	Moderate	Moderate	Low	Low	High	Low	Low	Low
Town Landfill	Low	Moderate	Low	Low	Low	High	Low	Low	Low
Electrical substation (NH Rte. 25)	High	Moderate	High	Low	Low	High	Low	Low	Low
Electrical substation (Moultonborough Neck Road)	High	Moderate	High	Low	Low	Moderate	Low	Low	Low
Lakes Region Water Utility	Moderate	Moderate	Moderate	Low	Low	Low	Low	Low	Low
Bay Sewage System Utility	Moderate	Moderate	Moderate	Low	Low	Low	Low	Low	Low
Commercial District - West (Rte 25 near Center Harbor town line)	High	Moderate	High	Low	Low	High	Low	Low	Low
Commercial District - Central (Moultonborough Neck Road)	High	Moderate	High	Low	Low	High	Low	Low	Low

Facility/Infrastructure	Lightning	Winter Weather (Blizzard/Snow Storm, Ice Storm, Nor'easter)	Severe Wind Event (Tornados, Downburst, Hurricane)	Flood	Wild Land Fire	Motor Vehicle Accident involving Hazardous Materials	Dam Failure	Earthquake	Epidemic
Commercial District - East Moultonborough Village	High	Moderate	High	Low	Low	High	Low	Low	Low
Castle Springs (commercial water withdrawal well)	Moderate	Moderate	Moderate	Low	High	High	Low	Low	Low
WestWynde (Taylor Community)	High	High	Moderate	Moderate	Moderate	Low	Low	Low	Moderate
Imaginations Childcare	High	High	High	Low	Low	High	Low	Low	Moderate
Deer Hill Camp	High	Low	Moderate	Low	Moderate	Moderate	Low	Low	Moderate
Quinebarge (camp)	High	Low	Moderate	Moderate	Moderate	Moderate	Low	Low	Moderate
Tecumseh (camp)	High	Low	Moderate	Moderate	Moderate	Moderate	Low	Low	Moderate
Robindel (camp)	High	Low	Moderate	Moderate	Moderate	Moderate	Low	Low	Moderate
Geneva Point (camp)	High	Low	Moderate	Moderate	Moderate	Moderate	Low	Low	Moderate
Winnaukee (camp)	High	Low	Moderate	Moderate	Moderate	Moderate	Low	Low	Moderate
Long Island (high density)	High	High	Moderate	High	High	Moderate	Low	Low	Low
States Landing (high density)	High	High	Moderate	High	High	Moderate	Low	Low	Low
Suissevale (high density)	High	Moderate	Moderate	High	Low	Moderate	Low	Low	Low
Balmoral (high density)	High	Moderate	Moderate	High	Low	Moderate	Low	Low	Low
Trexlers Marina	High	Moderate	Moderate	Moderate	Moderate	High	Low	Low	Low
Harilla Landing	High	Moderate	Moderate	Moderate	Moderate	High	Low	Low	Low
Ambrose Cove Marina	High	Moderate	Moderate	Moderate	Moderate	High	Low	Low	Low
Downtown Historic District	High	Moderate	Low	Low	Low	High	Low	Low	Low
Castle in the Clouds	High	High	Moderate	Low	High	High	Low	Low	Low
Lions Club property	Low	Low	Low	Low	Low	Low	Low	Low	Low

APPENDIX I: STALEEC RESULTS

As the Committee began the process of prioritizing these actions, the group considered the standard tool for project prioritization, the STAPLEE Method and felt that the tool needed to be modified to more accurately reflect the priorities of the town and strengths of the Committee members. It was noted by several on the Committee that while this Committee included several Selectmen, the Committee did not feel that scoring the political will of the community (P) was something that should be done by this Committee, therefore it was removed. Committee members felt that there was a need to distinguish between the cost of implementation and the economic benefits to the community, therefore the first 'E' was redefined to focus on the benefits to the community while the column 'C' was added to address the relative costs of implementation.

This section contains a summary of STALEEC rankings for each of the proposed Mitigation Actions by the Moultonborough Hazard Mitigation Committee. For each action, the benefits and costs of implementing the action (under each of the seven STALEEC categories) was considered and scored 1 – 3 with a one indicating the at the costs outweighed the benefits in a particular category, a three meant that the benefits were greater that the costs, and a two meant that the while there are costs associated with the project, they are balanced out by the benefits. The seven category scores were summed for an overall project total. A maximum total score is 21, the minimum is 7. These ratings were arrived at through committee discussion and group consensus.

Project Rating: Consider both the Costs and Benefits of implementing each of the actions listed below. Each action is to receive a score in each of the seven categories listed to the right (STALEEC) ranging from 1 - 3. **A score of 1 indicates** that there are more drawbacks or hurdles than benefits to this action in this category, **a score of 3 means** that the benefits to this action outweigh the costs in this category, and **a score of 2 means** that in this category, the benefits and costs balance each other out.	Social - Community Accept	Technically Feasible	Administratively Workable	Legally Workable	Economic - Benefits to Community	Environmental Impacts	Cost of Implementation	**TOTAL**
Moultonborough	**S**	**T**	**A**	**L**	**E**	**E**	**C**	
Keep duplicate emergency information records at Town Hall.	**2.8**	**2.8**	**2.8**	**2.8**	**2.8**	**2.6**	**2.8**	**19.4**
Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 1 - Conduct an engineering structural study.	**2.8**	**2.8**	**2.8**	**2.6**	**2.8**	**2.6**	**2.6**	**19.0**
Provide education and outreach to homeowners regarding floodproofing their property.	**2.4**	**2.8**	**2.8**	**2.4**	**2.2**	**2.6**	**2.4**	**17.6**
Conduct regular ditch maintenance to mitigate the flow of water alongside Bodge Hill Road.	**2.8**	**2.4**	**2.4**	**2.6**	**2.2**	**2.4**	**2.6**	**17.4**

Project Rating: Consider both the Costs and Benefits of implementing each of the actions listed below. Each action is to receive a score in each of the seven categories listed to the right (STALEEC) ranging from 1 - 3. **A score of 1 indicates** that there are more drawbacks or hurdles than benefits to this action in this category, **a score of 3 means** that the benefits to this action outweigh the costs in this category, and **a score of 2 means** that in this category, the benefits and costs balance each other out.	Social - Community Accept	Technically Feasible	Administratively Workable	Legally Workable	Economic - Benefits to Community	Environmental Impacts	Cost of Implementation	**TOTAL**
Moultonborough	**S**	**T**	**A**	**L**	**E**	**E**	**C**	
Investigate protection of the following critical facilities against power surges: Public Safety Building, Town Hall, Public Works, and Moultonborough Neck Fire Station.	**2.8**	**2.6**	**2.6**	**2.6**	**2.4**	**2.0**	**2.2**	**17.2**
Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 2 - Work towards implementation of the recommendations of the Step 1 Study (contingent upon funding).	**2.3**	**2.5**	**2.5**	**2.5**	**2.0**	**2.5**	**2.5**	**16.8**
Understand the dam emergency plan and maintain communication with the owners (NH DES).	**2.6**	**2.6**	**2.4**	**2.2**	**2.4**	**2.4**	**2.0**	**16.6**
Work with homeowner associations, especially in Balmoral and along Moultonborough Neck to trim and cut back vegetation, reducing the likelihood of blockage.	**3.0**	**2.6**	**2.4**	**2.0**	**2.0**	**2.0**	**2.6**	**16.6**
Reach out to the homeowners associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.	**2.8**	**2.4**	**2.4**	**2.4**	**2.2**	**2.0**	**2.4**	**16.6**
Create and implement dry hydrant maintenance plan.	**2.8**	**2.4**	**2.4**	**2.4**	**2.4**	**2.0**	**2.0**	**16.4**
Work with private road associations throughout town to educate and meet minimum road standards for the private roads. These standards include things such as road widths, road base, and clear zones.	**2.8**	**2.4**	**2.4**	**2.2**	**2.0**	**2.0**	**2.6**	**16.4**
Work with homeowner associations, especially along Moultonborough Neck to develop gated Emergency Access Routes.	**2.4**	**2.4**	**2.2**	**2.2**	**2.0**	**2.2**	**2.6**	**16.0**
Conduct erosion repair on the steep slopes of Ossipee Park Road. Install a bituminous curb to concentrate water to a closed drainage system.	**2.2**	**2.6**	**2.0**	**2.0**	**2.2**	**2.6**	**2.2**	**15.8**

Project Rating: Consider both the Costs and Benefits of implementing each of the actions listed below. Each action is to receive a score in each of the seven categories listed to the right (STALEEC) ranging from 1 - 3. **A score of 1 indicates** that there are more drawbacks or hurdles than benefits to this action in this category, **a score of 3 means** that the benefits to this action outweigh the costs in this category, and **a score of 2 means** that in this category, the benefits and costs balance each other out.	Social - Community Accept	Technically Feasible	Administratively Workable	Legally Workable	Economic - Benefits to Community	Environmental Impacts	Cost of Implementation	**TOTAL**
Moultonborough	**S**	**T**	**A**	**L**	**E**	**E**	**C**	
Final FIRMs will be shown on the town GIS as a new layer when released in 2013.	**2.2**	**1.8**	**2.4**	**2.2**	**2.4**	**2.4**	**1.8**	**15.2**
Develop an understanding and working relationship to partner with the private water utility to share information regarding contingency plans.	**2.4**	**2.4**	**2.0**	**2.0**	**2.0**	**2.0**	**2.4**	**15.2**
Develop an understanding and working relationship to partner with the sewer utility to share information regarding contingency plans.	**2.4**	**2.4**	**2.0**	**2.0**	**2.0**	**2.0**	**2.4**	**15.2**
Obtain access to additional traffic response equipment and trailer capability (up to four) to serve as message boards along main roads.	**2.2**	**2.4**	**2.6**	**2.2**	**1.6**	**2.4**	**1.6**	**15.0**
Take steps to raise the profile in the State's work plan of NH Route 25 intersections at Sheridan Road and in the Village. Recommended improvements include signage, signaling, and road/intersection configurations to increase safety at these high risk intersections.	**2.2**	**2.2**	**2.2**	**2.2**	**2.4**	**1.8**	**1.6**	**14.6**
Staff will bring regulations to the Planning Board for consideration requiring underground cables for new development.	**1.6**	**2.2**	**2.0**	**2.4**	**2.0**	**2.4**	**1.8**	**14.4**
Investigate the construction of a runaway truck ramp on Ossipee Park Road.	**2.0**	**2.0**	**2.4**	**2.2**	**1.8**	**2.2**	**1.8**	**14.4**
Staff will bring draft regulations for driveway standards on steep slopes to the Planning Board for consideration.	**1.6**	**2.0**	**2.2**	**2.2**	**1.8**	**2.4**	**2.0**	**14.2**
Engage in a conversation with the homeowners' associations (along Sunrise Drive and Robin Lane) regarding maintenance of roads and drainage.	**2.4**	**2.0**	**2.0**	**1.8**	**1.8**	**2.0**	**1.8**	**13.8**

APPENDIX J: EXISTING PLANS, STUDIES, REPORTS, AND TECHNICAL INFORMATION

Moultonborough Hazard Mitigation Plan, 2007
Moultonborough Master Plan Update, 2007
Moultonborough Zoning Ordinance
Moultonborough Subdivision Regulations
Moultonborough Site Plan Regulations
"Development Activity in the Lakes Region, 2011 Annual Report", Lakes Region Planning Commission.
FEMA Community Information System
Town Assessor Database, 2011
"2010 Multi-Hazard Mitigation Plan", NH Homeland Security and Emergency Management
National Oceanic and Atmospheric Administration website
NH Division of Forests and Lands http://www.nhdfl.org/fire-control-and-law-enforcement/fire-statistics.aspx

APPENDIX K: MONITOR, EVALUATE, & UPDATE

Table A: Periodic Hazard Mitigation Plan Review Record

Meeting Schedule (dates)	Tasks Accomplished	How well (or not-so-well) is implementation progressing?	Lead Parties	Public Involvement (citizens, neighboring communities)

Table B: Project Implementation Checklist

ID	Recommended Action	Lead Party	Potential Funding	Time Frame	Status 2013	Status 2014	Status 2015	Status 2016
12	Conduct regular ditch maintenance to mitigate the flow of water alongside Bodge Hill Road.	DPW	Operating Budget	Annual 2013 -17				
18	Work with homeowner associations, especially in Balmoral and along Moultonborough Neck to trim and cut back vegetation, reducing the likelihood of blockage.	DPW	Operating Budget	Annual 2013 -17				
20	Work with private road associations throughout town to educate and meet minimum road standards for the private roads. These standards include things such as road widths, road base, and clear zones.	DPW	Operating Budget	Annual 2013 -17				
15	Take steps to raise the profile in the State's Ten-Year Plan of NH Route 25 intersections at Sheridan Road and in the Village. Recommended improvements include signage, signaling, and road/intersection configurations to increase safety at these high risk intersections.	Town Admin., DPW	Operating Budget	Annual 2013 -17				
13	Engage in a conversation with the homeowners' associations (along Sunrise Drive and Robin Lane) regarding maintenance of roads and drainage.	EMD, DPW	Operating Budget	Annual 2013 -17				
14	Provide education and outreach to homeowners regarding floodproofing their property.	Town Planner	Operating Budget	mid-2013				
2	Keep duplicate emergency information records at Town Hall.	EMD	Operating Budget	2013				

ID	Recommended Action	Lead Party	Potential Funding	Time Frame	Status 2013	Status 2014	Status 2015	Status 2016
11	Conduct erosion repair on the steep slopes of Ossipee Park Road. Install a bituminous curb to concentrate water to a closed drainage system.	DPW	Capital Budget	2013				
4	Staff will bring regulations to the Planning Board for consideration requiring underground cables for new development.	Town Planner	Operating Budget	2013				
21	Investigate the construction of a runaway truck ramp on Ossipee Park Road.	Town Admin., Town Planner	Operating Budget	2013				
6	Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 1 - Conduct a propagation study (with soft estimate for implementation).	Police Chief	Operating Budget	2014				
17	Investigate protection of the following critical facilities against power surges: Public Safety Building, Town Hall, Public Works, and Moultonborough Neck Fire Station.	DPW	Operating Budget	2014				
16	Understand the dam emergency plan and maintain communication with the owners (NH DES).	EMD	Operating Budget	2014				
5	Create and implement dry hydrant maintenance plan.	Fire Chief	Operating Budget	2014				
3	Final FIRMs will be shown on the town GIS as a new layer when released in 2013.	Town Planner	Operating Budget	2014				

ID	Recommended Action	Lead Party	Potential Funding	Time Frame	Status 2013	Status 2014	Status 2015	Status 2016
8	Develop an understanding and working relationship to partner with the private water utility to share information regarding contingency plans.	Town Admin.	Operating Budget	2014				
1	Obtain access to additional traffic response equipment and trailer capability (up to four) to serve as message boards along main roads.	Police, EMD	HMPG, HSIP	2014				
7	Staff will bring draft regulations for driveway standards on steep slopes to the Board of Selectmen for consideration.	Town Planner	Operating Budget	2014				
9	Develop an understanding and working relationship to partner with the sewer utility to share information regarding contingency plans.	Town Admin.	Operating Budget	2015				
6A	Reduce the number of gaps in the emergency communication system and streamline the system to limit the number of channels needed to send and receive messages. Step 2 - Work towards implementation of recommendations of the Step 1 Study (contingent upon funding).	Police Chief	Operating Budget	2017				
19	Work with homeowner associations, especially along Moultonborough Neck to develop gated Emergency Access Routes.	EMD	Operating Budget	2017				
10	Reach out to the homeowners associations, especially on Long Island to promote and implement the practices of the FireWise Communities program.	Fire Chief	Operating Budget	Start - 2015 Finish - 2017				